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Contents

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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The Manchester Meeting

So far the Manchester annual meeting of the Society of Chemical Industry has been mainly distinguished by the statesmanlike message from the American president (Dr. A. D. Little) on the subject of "Science and Labour." It was in some ways a very simple address. Its clear English and its clear sense could be followed by any layman of average intelligence. It was an appeal to Labour—that is, to the ordinary worker—not to yield to prejudice in its attitude to science when science invents machines or processes that momentarily displace manual labour. The violent scenes that have accompanied the introduction of new machinery, from time to time, are already the commonplaces of industrial history. Once the fallacy on which they rest is granted, the worker's opposition is logical. Assuming that there is always a fixed amount of work, and no more, it is natural, as Dr. Little argued, that Labour should object to a machine that enables one man to do the work of two and so displaces one of the two men formerly employed. But when the fundamental fallacy is pricked, the worker's case for opposition disappears.

Machines like the typewriter, for example, end, not in the displacement of the few clerks, though that in the first stage is inevitable, but in the ultimate employment of immensely larger numbers, and in the creation of new industries. The same is true of wireless, the telephone, the automobile, artificial silk and many other new inventions. That is the essential message that Dr. Little brings from the home of mass production. It is a message that might well be in the hands of every worker and every trade-union official. The claim that research is one of the ways of solving the unemployment problem is well worth the attention of the Minister who is specially charged with the handling of this matter. Mr. Thomas will, in the course of the next few months, be asked to consider many ways less worthy of attention.

As to the business side of the meeting, the election of Dr. Levinstein to the chair of the Society is peculiarly appropriate in the city with which he has so long been associated. With his health happily restored, and a loyal body of members and officials ready and anxious to support him, there is every ground for looking forward to a happy and prosperous year of office. The recent selection of Mr. H. J. Pooley for the office of secretary is generally approved. The expression of appreciation the members offered, both verbally and in a more practical shape, to Dr. Longstaff on his retirement, may be fittingly supplemented by one of goodwill to his successor in carrying on and developing the work of the Society. There is still a decline of membership, and this, occurring over a series of years, is not a matter to be lightly explained away. It points to some cause that must be truly diagnosed and removed. One gathers from Dr. Smith's statement that the situation is being thoroughly examined and that good results are expected. The financial position is roughly the same as last year. As we read the figures, the total expenditure is £24,510 17s. 11d., as compared with £23,764 18s. 11d. in the previous year, and the total income is £24,656 16s. 11d., as compared with £24,586 13s. 7d. The expenditure has therefore increased by £745 19s., while the income has increased by only £170 3s. 4d. There is not much in it either way; yet here, again, it would be better to see the balance even, or, still better, on the right side. This problem, too, we are given to understand, is being thoroughly considered, with prospects of good results.

The Australian Merger

THIS week the bare announcement has been made of a merger of the fertiliser interests of Nobels (Australasia) Ltd., Cuming, Smith and Co. Pty. Ltd. (superphosphate manufacturers), Wischer and Co. Pty. Ltd. (fertiliser manufacturers), and the chemical works of the Mount Lyell Mining and Railway Co. Ltd. (fertiliser manufacturers). Beyond the fact that the merger will be capitalised at £7,000,000 little has been revealed about it. It is clear from the names of the merging

companies (details regarding the last three of which were given in this journal on June 15) that the matter is one of great significance, and in particular the inclusion of Nobels (Australasia) Ltd., seems to indicate a connection with British chemical industry. The German chemical press has lately mentioned rumours that a great synthetic fertiliser plant is to be erected in Australia, and while all such reports must be treated with reserve until they are confirmed, it is quite possible that the announcement of the formation of the merger will be the prelude to some very remarkable developments.

A Low Temperature Pithead Plant

THE very large party of experts, public officials and press representatives, who visited the Askern Collieries, near Doncaster, on Friday, to witness the opening of the new Coalite carbonisation works, saw, under interesting conditions, the most recent example of low temperature enterprise in this country. The plant has been erected for Doncaster Coalite, Ltd., by Low Temperature Carbonisation, Ltd., and is not only the first Coalite carbonisation plant to be erected at a pit-head, but is also understood to be the largest and most modern low temperature carbonisation works completed in Great Britain. It is situated at the pit-head of the Askern Colliery, which is owned by the Askern Coal and Iron Co., with whom arrangements have been made for the supply of coal direct from the pithead over a period of years. The plant is being erected in two sections. The section now completed is capable of carbonising, by the Coalite process, 90,000 tons of coal a year, and the eventual throughput will be 180,000 tons of coal, which should yield approximately 127,000 tons per year of smokeless fuel (Coalite) and 3,731,000 gallons per year of oils and petrol.

The plant, which began operating on Friday, will carbonise day and night for seven days a week. The Coalite produced at these works is considered suitable for burning in the ordinary open household grate, and the entire output of the works has been sold in advance up to next winter.

The crude coal oil produced by the Coalite carbonisation process is easily resolved by distillation into a number of fractions, and by cracking can be converted into petrol and fuel oil. The cars in which the party travelled to the works were, in fact, driven on petrol obtained from British coal. In addition to the crude oil, there is scrubbed from the gas a further quantity of crude spirit which, in the first part of the Askern plant, is estimated to equal about 250,000 gallons per year. This spirit has already been used for a variety of high efficiency engines, such as aircraft motors, racing automobiles, mechanical transport, etc., and the demand for this coal petrol, based upon performance, exceeds any supplies that can be made available for some time to come. Arrangements have been made with Petroleum Refineries, Ltd., who are erecting a special cracking plant on the Humber, to specialise in the cracking of the crude oil obtained in the Coalite carbonisation process. At these works the crude coal oil will be resolved into high-grade petrol and fuel oil, which will be available for the Admiralty Tank Farm on the adjoining site. The Askern Coalite plant will utilise small coals and slack.

The Coalite process to be employed has been perfected over thirty years of research and practical experiment, and has been in operation at the works of the parent company, Low Temperature Carbonisation, Ltd., at Barugh, Yorkshire. There are many notable improvements, however, on the Barugh plant, and it is claimed that the Askern works represent the latest advance in the economic production of solid domestic smokeless fuel from small coal and slack. The works at present consist of four batteries each containing 36 retorts, and, as at Barugh, the retorts are iron castings made of special quality iron of the normal Parker design. An interesting feature is the interposition of a rotary drier between the colliery washer and retorts.

The gas handling plant represents an entirely new feature. In a normal process of tar or coal oil recovery, practically the whole of the water in the coal is condensed out as liquor along with the tar, and the two products are separated by being allowed to stand in a decanting tank. In this case the degree and time of separation depend on the difference in specific gravity between the oil and the liquor. In the case of the Askern plant a system of electrostatic precipitation is employed for the recovery of coal oil. The electrostatic precipitation plant is of the Simon-Carves Ferranti type. A transformer is installed to raise the incoming voltage to that required to give the necessary K.V. output from the rectifier. The high tension output from the rectifier is a single-phase uni-directional current of about 40,000 volts. In accordance with economical practice, as this plant is not situated near the gas works, the gas generated during the operation of the process is used for heating the retorts and for general boiler house purposes. The weekly output at present is reported to be 1,250 tons of Coalite, 35,000 gallons of coal oil, 4,000 gallons of crude motor spirit and 10 tons of sulphate of ammonia.

The opinion formed of the plant and the whole scheme of working was generally favourable, and there would appear to be a sufficient margin between costs and revenue to produce a satisfactory return, always supposing the commercial management to be good. Some decorative interest was given to the opening function by the presence of Miss Jennie Lee, M.P., and Miss Ellen Wilkinson, M.P., who arrived by aeroplane.

British Synthetics, Ltd.

A STATEMENT is published to-day in our notes in the *Dyestuffs Monthly Supplement* explaining the position of British Synthetics, Ltd., in relation to the manufacture of naphthol products. It is published in order to remove any possible misapprehension concerning what appeared on the same subject in the *Dyestuffs Monthly Supplement* of June 8.

The Calendar

July 16	Society of Chemical Industry (South Wales Section): Visit to works of J. S. Fry and Sons, Ltd., Somerdale, near Bristol.	Bristol.

The Society of Chemical Industry

Annual Meeting in Manchester

Manchester, Tuesday.

MANCHESTER yesterday received us in a surprising blaze of sunshine. This positive evidence that the place is not entirely dependent in such matters on the particular vitamin that deputises for the sun was, unfortunately, withdrawn only too hastily, and to-day we have the familiar damp pavements and grey skies. There is no sign, however, of any dampness or depression in the delegates, who, I am told, number about 400, and just half of whom turned out this morning for the annual meeting proper in the beautiful hall of the College of Technology. The business of to-day was preceded last evening by an informal but very jolly reception in the College, at which the Associateship of the College was conferred on Dr. Little, the American president. It was a good beginning, and set just the right note.

The present Manchester meeting will be remembered for a discovery of real historical value. The committee have discovered that Manchester has a "soul," and have published a very fine commemorative book to tell us all about it. It is boldly entitled *The Soul of Manchester*, and the editor is Mr. W. H. Brindley. That genuine bookman and lover of art, the Earl of Crawford, is really responsible. To the bulletin of the John Rylands Library he recently contributed an article on "The Soul of Cities" (which is incidentally reprinted as the first chapter of the book); so Manchester, which has never admitted being second to anything else on earth, instantly became self-conscious of a soul of its own, and sets out here to prove it has a very good one, by putting into the literary witness-box a convincing succession of professors, teachers, bookmen and journalists.

According to Lord Crawford, you first look for a city's soul in its central pivotal Square, Market, Piazza, Place, Platz or Plaza. Then you follow its diffusion through the streets, which constitute a sort of nervous system. Caught rather by this fascinating idea, and starting from Albert Square, as the Whit Monday processions do, I traced the soul of Manchester last evening through several delightful thoroughfares like Stretford Road, Great Jackson Street, Lornbrook Street, and a few others. Frankly, it seemed to be a soul in travail, one that had perhaps originally set out for Paradise but had badly missed its way. Going back to the book for an explanation, I think I found it in the final chapter, one by Lucio, the author of those clever verses that appear in the *Manchester Guardian* Miscellany column, who now casts off his disguise and writes under his baptismal name of Gordon Phillips.

If the "soul" of Manchester means the Manchester man's point of view, you have it in Lucio's article. Like London, he tells us, Manchester has the "misfortune" to be a capital city—not a large Lancashire industrial town, not a great provincial city, but, mark you, a full-blown capital. This, of course, is really one of the magnificent tyrannies that the greatest editor and one of the greatest men of his generation has firmly imposed on his fellow-citizens of Manchester. Never is the word "provincial" as applied to the city or to its great journal allowed to appear in the *Manchester Guardian*, just as you never see any reference in it to political or industrial "circles," though now and again you may read in it of such "quarters."

So the *M. G.* dogma has sunk into Manchester's mind or soul, whichever word you choose to use, and there you have it—a city all on its own, no satellite of some greater body, but a centre of life and character, of purpose and achievement, of culture and commerce, self-sufficient, magnificently independent. You feel that dominant thought running right through the collection of brilliant contributions the editor has brought together in *The Soul of Manchester*—in J. L Paton's tribute to the great Grammar School of which he was High Master, equally as in Haslam Mills's characteristic gossip about Manchester and its Press; in the scholarly notes on literary Manchester and its beautiful Rylands Library by Professor Herford and Henry Guppy; and so on through all the rest. In spite of this brazen challenge to the Cockney's supremacy, something of precedent and example may yet come out of it, as Mr. Cronshaw suggested at to-day's luncheon. It may establish the habit, as the Society goes on its round of visits to cities and towns, of expressing in a book the "soul" of each place in which the Society meets, and of securing for its president for the time being an honorary degree from every university town or city visited.

The annual business meeting of the Society this morning had one great feature—Dr. Little's presidential address on "Science and Labour." It was a reasoned, perfectly-stated argument against the hostile attitude of Labour towards new inventions that momentarily supersede manual toil, supported by a great body of industrial facts to show that in wireless transmission, in the telephone, in the automobile industry and in artificial silk, the scientific discoveries of to-day are the means of employing thousands of workers in new industries to-morrow. The case was the more remarkable in that it came from a land of mass production, high wages and low unemployment. It was interesting, too, as showing how closely parallel are the British and American views on the relation of science to industry, and how little there is, in intellectual and moral outlook as well as in literary expression, to distinguish the one race from the other. There was no discussion on the address, but the prolonged applause that followed it showed how thoroughly it had been appreciated, and Dr. Little was obviously touched by the demonstration. It was left to Dr. E. F. Armstrong, in the fitting terms he knows how to employ, to express the thanks of the meeting to the president.

Two other incidents gave a little colour and emotion to what was otherwise a drab business sitting. The first was the visit of the Lord Mayor, who read a message of greeting to the Society, which was replied to in perfect terms by the President. It was a delightful compliment that Dr. Little paid to the city in reminding the Lord Mayor that the United States possesses no fewer than 28 Manchesters, which serve as constant reminders that the Manchester colonist never forgot the place of his birth. The other incident was the unanimous vote to Dr. Longstaff, the retiring secretary, of a pension of £400 a year, and the presentation of a cheque to him as an additional token of the respect and affection of the members, whom he has loyally served for over twelve years. Dr. Longstaff expressed, in terms that were not free from emotion, his sense of the members' goodwill and appreciation.

Of business discussion there was practically none. The annual report still records a decline in membership, but the treasurer, Dr. Smith, stated a number of reasons to account for this (including an unusually long death-roll) and to justify his claim that the downward tendency had now been

practically arrested and that from now on they might expect the membership curve to take an upward turn. Similarly, with the balance sheet, though the balance in hand on the year is £145, as compared with £821 last year, the treasurer was able to show that the real position was distinctly better than it appeared in the accounts. The nomination of Dr. Herbert Levinstein as president for the ensuing year was unanimously confirmed, and the meeting closed in an atmosphere of mutual compliments.

The luncheon given to the members by the Manchester committee after the conference was a great function, with four really good speeches by Dr. Little, Dr. Redman of New York, Mr. Harold Talbot and Mr. Cronshaw (who presided). Dr. Little, who proposed the toast of "The Manchester Section," confessed with delightful naïveté that while travelling with Mr. and Mrs. Carr through the Southern counties he had seen so many noble cathedrals that he could not remember which was which, but they left in his mind a composite picture of what an English cathedral ought to be. So in travelling about and making so many delightful acquaintanceships, he felt that he was in danger of forgetting the actual individual in the composite picture he would carry back of what the Englishman and English hospitality really were. Dr. Redman, who welcomed us to New York last autumn in that delightful and well-remembered speech, seconded the toast in an address full of fire and humour, and a touch of that mysticism that often creeps into his thoughts—as when he referred to the lonesomeness of the research worker and his need for companionship. And then came Mr. Harold Talbot to complete the tribute with that mixture of good sense, shrewd wit and infectious good humour that we have come to expect from him. Mr. Cronshaw, deluged with praises from both sides of the Atlantic, found relief in passing on the compliments to his committee, especially to the secretary and the editor of the commemorative volume, and so brought a very successful gathering to a happy close.

An interesting piece of news has just been communicated to me. The Chemical Engineering Group has been considering the appointment of a successor as secretary of the group to Mr. H. J. Pooley, recently appointed to the secretaryship of the Society of Chemical Industry. The Group's choice has fallen on Mr. W. F. Darke, who tells me that he has accepted the appointment. He is regarded as an excellent man for the position, and the Group is to be congratulated on securing his services.

Mr. Darke was educated at the King Edward School, Bath, and at Bristol University, where he graduated with first class honours in chemistry. He is an Associate of the Institute of Chemistry. In 1914, he obtained a commission in the Gloucester Regiment, and served during the war until 1919; he was awarded the M.C., and retired with the rank of major. Mr. Darke has been engaged for some years in research and technical investigations in connection with industrial chemistry, and is well known in the chemical and chemical engineering industries.

Mr. Calder and Mr. King, whose invitation to the Society to visit Birmingham next year was so cordially accepted on Tuesday, tell me that already preparations for the visit have been started. A very good committee is already in existence, and although Birmingham has fewer definitely chemical firms than Manchester, the promises of support for the annual meeting of 1930 are most encouraging. It is difficult to say whether Mr. Calder as the chairman or Mr. King as the secretary is the keener on the subject, but it is clear that both are full of confidence in Birmingham's ability to justify the visit and to make next year's meeting a conspicuous success.

The American visitors here are not numerous, but the United States could have had no better representatives. In addition to Dr. and Mrs. Little, I have come across Dr. and Mrs. Redman and their family, who seem everywhere to be renewing their New York acquaintanceships of last year. Dr. Ellwood Hendrick, of course, one meets everywhere, genial and popular as ever. Mr. Dorr also has arrived, looking very well, full of business developments, and as much at home here as on the other side of the water.

Reception and Civic Welcome

The first function at the meeting was a reception at the Municipal College of Technology by the chairman (Mr. C. J. T. Cronshaw) and committee of the Manchester Section, on Monday.

At this function, the Honorary Associateship of the Municipal College of Technology was conferred upon the President of the Society by Principal B. Mouat Jones. The Associate-Elect was introduced to the principal by Professor Kenner, who, in the course of his remarks, referred to the intimacy of language and thought between this country and the United States, to which latter nation Dr. Little belonged. He felt that in the development of science the greatest hope for Anglo-Saxon amity and world peace was to be found, and Dr. Little was a worthy representative of a great sister nation.

The degree having been conferred by the Principal, Dr. Little expressed the warm appreciation of himself, and of the other American members of the Society of Chemical Industry, of the compliment which had been paid him.

The members assembled on Tuesday morning in the Examination Hall of the Municipal College of Technology, and were welcomed by the Lord Mayor, Colonel G. Westcott, who said that probably the most delightful part of the duties of a Lord Mayor was to welcome to the City the members and delegates of learned bodies and industrial organisations, but, in a year of office when this duty had been unusually pronounced, to none was the welcome warmer or more appropriate than that which he extended to the Society of Chemical Industry on behalf of the aldermen, Corporation and citizens of Manchester.

It was an obvious truth that the life of an edifice depended upon its foundations, and it was a matter of pride to the citizens of Manchester that the founders of the Society of Chemical Industry nearly 50 years ago had dug deep into the industrial soil of Manchester in laying the base of the Society's world-wide organisation. Its first president, Sir Henry Roscoe—a leading light of the city and its university—was the forerunner of the many illustrious men who had filled that office. In Manchester they were proud to be dubbed practical men, and found it fitting that the Society was formed in the district with the object, which it had maintained, of fostering the science of the practical application of chemistry.

The strength of the Society's organisation and its scope was in no greater degree exemplified than in the person of the president and the loyal band which accompanied him from the American Continent. The citizens of Manchester were proud to welcome their cousins, and particularly Dr. Little, not only as President of the Society, but as one who had taken so great a part in the betterment of the welfare of the worker—a matter very near to their hearts.

The Home of Chemistry

The PRESIDENT, in returning thanks, said he was signally honoured to be privileged to accept on behalf of the Society the gracious welcome extended by the Lord Mayor. Chemists the world over, he said, would recognise the peculiar appropriateness of Manchester as a meeting place for chemists who applied their science to the development and problems of industry. They came naturally to a city which was the centre of industrial England; which was famous everywhere as the birthplace of modern textile manufacture; which was surrounded by great chemical plants; and which carried on its long roll of distinguished citizens names that were household words in every chemical laboratory. They had come to the city of Sir Henry Roscoe and his co-worker, Carl Schorlemmer, the home of J. P. Joule, and they recalled with an especial sense of obligation that here in Manchester John Dalton had developed the atomic theory—one of the greatest foundation-stones of chemistry.

To a New Englander such as himself the name of Manchester brought up many other associations, for each of the New England states had its Manchester, except Rhode Island, which was so small that a three-syllable place-name was liable to run over into another state. (Laughter.) In Massachusetts, Manchester was a charming little city by the sea where fortunate Bostonians spent the summer; in New Hampshire it was a city famous, like its namesake, for its cotton manufactures; in Connecticut, Manchester was distinguished for its silk industry. But for really important activities one went to the lovely little hill-town of Manchester, Vermont, to play golf on a renowned course within the shadow of the Green Mountains. All in all, the loyal sons and daughters of Manchester had perpetuated the associations of their birthplace by giving its name to communities in twenty-eight of the United States. Therefore, he felt very much at home in Manchester, and on behalf of the Society he thanked the Lord Mayor for the cordial welcome he had extended and for the hospitality which the members of the Society were privileged to enjoy.

The business of the annual general meeting was then proceeded with.

The Annual General Meeting

The minutes of the last annual general meeting, held on September 4, 1928, were taken as read and were adopted. There being no ballot for the election of new members of council, the president moved the election of the following nominees, who were elected unanimously to fill the four vacancies existing:—Dr. A. E. Dunstan, Mr. C. J. Goodwin, Dr. J. P. Longstaff, and Mr. B. G. McLellan.

The Council's Annual Report

In the annual report of the council on the activities of the Society during the year 1928-29, it was stated that the membership at July 9, 1929, was 4,525, as compared with 4,648 at September 4, 1928. The council regretted to record the deaths of 57 members.

The council has elected Dr. W. R. Hodgkinson, C.B.E., an honorary member of the Society in recognition of his long and valued services on the council and on the publications committee.

Dr. Herbert Levinstein, who was appointed by the council to be its chairman owing to the absence of Dr. Little in America, had been unanimously nominated for election as president for the year 1929-30. Dr. E. W. Smith and Dr. E. F. Armstrong, F.R.S., had been re-elected honorary treasurer and honorary foreign secretary respectively. The vice-presidents who retired were Professor P. P. Bedson, Dr. Bernard Dyer, Dr. H. Levinstein, Sir James Walker, F.R.S., and Mr. W. J. U. Woolcock. To fill the vacancies so created the council had nominated Dr. J. T. Dunn, Dr. A. D. Little (the retiring president), Mr. W. Macnab, Mr. L. Guy Radcliffe, and Mr. E. Thompson. Four ordinary members retired from the council: Mr. D. L. Howard, Dr. P. May, Lieut-Col. G. P. Pollitt, and Mr. J. H. Young. Dr. A. E. Dunstan, Mr. C. J. Goodwin, Dr. J. P. Longstaff, and Mr. B. G. McLellan had been nominated by members of the Society to fill the four vacancies among the ordinary members of council.

Jubilee of the Society

The Society, founded in 1881, would attain its jubilee in 1931. Owing to the importance of this event, the Council had already appointed an executive committee, consisting of the members of the finance committee along with the surviving past presidents of the Society, to proceed at once to discuss plans for celebrating the occasion in an adequate manner. It was hoped that a large number of the Society's overseas members, including contingents from the American, Australian, and Canadian Sections, would attend the meetings which, it had been decided, would be held in London in July, 1931.

On the motion of the president, seconded by Dr. E. F. Armstrong, the annual report of the council was taken as read and was adopted unanimously.

Balance Sheet and Accounts

Dr. E. W. Smith (hon. treasurer) submitted the balance sheet and accounts for the year 1928. The council had definitely gone out of their way to be conservative. The profit shown on the income and expenditure account was £145 19s. This could have been very much greater, but the council, in their wisdom, had decided to allocate £500 towards the cost of the decennial index for 1923-32.

Referring to the income, he said there was a reduction of membership to the extent of 99, but the position was not so bad as it might appear. There had been a gradual reduction of membership during the year, but analysis of the figures would enable one to view the matter in its proper perspective. There had been a big influx of junior members last year, owing to the American visit; also, more deaths than usual had occurred. When these two facts were taken into account it would be demonstrated that the Society had been running at practically level gauge, and that the loss of membership had been stopped.

On the motion of Dr. Smith, seconded by Mr. C. J. T. Cronshaw (chairman of the Manchester section), the accounts and balance sheet were adopted.

The New President

The President announced that Dr. H. Levinstein had been nominated as the next president of the Society, and paid a tribute to Dr. Levinstein as a worthy occupant of that office. Dr. H. Levinstein (who was received with prolonged applause) expressed gratitude to the president for his kind remarks, and to the members for the cordial manner in which they had received him.

Dr. Levinstein proposed that the consent of the meeting be given to a grant of a retiring pension of £400 per annum to Dr. J. P. Longstaff on his retirement from the office of general secretary. The duty of proposing this, he said, was a most agreeable one. The council which had worked under the presidency of Mr. F. H. Carr had approved the grant unanimously, and the last council (over which he, Dr. Levinstein, had presided, in the absence of Dr. Little) had unanimously confirmed it, but it was necessary that the members, in general meeting, should formally approve it, as he felt sure they would. The resolution was seconded by Dr. E. W. Smith, and was carried unanimously.

To fill the vacancies created by retirements, the following were elected vice-presidents: Dr. J. T. Dunn, Dr. A. D. Little, Mr. W. MacNab, Mr. L. Guy Radcliffe, and Mr. E. Thompson

Invitation to Birmingham in 1930

Mr. W. A. S. Calder, on behalf of the Birmingham and Midland Section, invited the Society to hold its annual general meeting in Birmingham in 1930. He added that recently he had met Mons. Paul Kestner, who had asked him to convey to his many friends his very warmest greetings. Mr. Calder conveyed these greetings with the greatest pleasure.

Mr. G. King supported, on behalf of the Birmingham and Midland Section, the invitation to the Society to visit Birmingham in 1930. The invitation was accepted.

Presentation to Dr. Longstaff

The President, on behalf of the members, presented to Dr. J. P. Longstaff a purse, on his retirement from the office of general secretary of the Society, as a mark of appreciation of his many services. The members of the Society throughout the world, said the President, had many things for which to thank Dr. Longstaff, and in retiring from the general secretaryship of the Society he left them greatly in his debt. For more than twelve years the interests of the Society had been closer to him than his own. During that period he had carried with devotion and efficiency the growing and exacting burden of the Secretary's office. He had also done a better and more difficult thing than that, for he had commanded the affections of the members and had made them all his friends. It was his (the President's) privilege—and the happiest one he would be called upon officially to exercise—to ask Dr. Longstaff to accept the purse from the members of the Society as a token, but by no means a measure, of the esteem and affection in which they held him.

The purse was presented amid applause.

Dr. Longstaff, in expressing his thanks to the President and the members generally, said he was very much touched by this token of their regard, though he felt he had done nothing which had entitled him to it. Whilst in office he had tried to keep on good terms with the members, and this presentation led him to think that he had not been altogether unsuccessful in this respect. He accepted the purse with gratitude.

The President then proceeded to deliver his address.

Dr. A. D. Little's Presidential Address

Science the Creator of Employment

INASMUCH as this was the first opportunity he had had of greeting many of the members face to face, Dr. A. D. Little prefaced his presidential address by expressing his sensibility of the honour they had done him in permitting him for a time to serve as their president. He used the word "serve" in its Miltonian sense, for during his term of office he had had to console himself with the great poet's assurance that "They also serve who only stand and wait." To his regret, distance had prevented him from participating actively in the affairs of the Society, and he expressed his great obligation to Dr. Levinstein, who, as chairman of the council, had done so much better than he could have done the things that he had left undone. Indeed, Dr. Levinstein had done those things so very well that he (Dr. Little) was led to suggest the advantages to the Society of having a president permanently in the United States.

Passing to his presidential address, entitled "Science and Labour," Dr. A. D. Little said that in the early Middle Ages craft workers in Europe were better off than the slaves of the Roman system, but they were serfs. Their lives were cheaply held. For the murder of a goldsmith one paid 150 sous; for that of an iron worker 50 sous; a carpenter was appraised at 40 sous, and a common labourer at 30. Even in England, as late as the eighteenth century, the condition of the working population was often deplorable and precarious in the extreme. Such amelioration as at first resulted from the Industrial Revolution had, by the middle of the nineteenth century, for the most part disappeared in the factory system as then developed in England, Europe, and America, and particularly in the textile trades.

Without this background it is impossible to realise the enormous gains for which the worker in our own time is indebted to the machine. The jinricksha man is still slave to his machine. The locomotive engineer is master of his. What driver of a motor truck would change places with a transport coolie? What operator of a band-saw would take his place in the pit to work one end of a two-man saw while blinded by the shower of sawdust? Yet riots followed the first attempts to establish power sawmills.

Who would prefer handling pig iron, pig by pig, by the strain of his own muscles, to moving tons at a time while comfortably seated in the control house of a magnetic crane? Brawn, without intelligence, can make slow progress with a spade. It takes a man to operate a steam shovel or pick up a car of coal or iron ore and dump it with a turn. Who would rather swing a sledge than feel that he controlled the mighty power of a steam hammer?

Machine Tending

It is true, nevertheless, that there are many jobs at machine tending, where the worker has no responsibility for its control, which are demoralising and deadening for the individual endowed with imagination and initiative. Not all workers, however, are so endowed. There are those who prefer repetitive work which they can easily learn, and which makes little or no demand on mentality.

A case comes to mind where there was a large monthly turnover of labour in an establishment in which, however, the most effective workers remained indefinitely. A psychologist was called in who applied intelligence tests to the whole group. It then became evident that only the more intelligent workers were involved in the turnover, those of low intelligence being contented and happy in their work. The advice of the psychologist to the management was, therefore, "Select stupidity and train it."

For many years manual workers entertained the fallacy that there is only so much work to be done in the world. Since its amount seemed to them hardly sufficient to keep them all employed, it appeared obvious that any device that enabled one man to do the work of two must deprive the second man of his job.

The Introduction of the Machine

The typewriter undoubtedly displaced some copying clerks, but it provided employment for a far greater number of typists, led to the establishment of special schools, and provided jobs for thousands in factories for manufacturing the machines and their accessories of ribbons, carbon paper, stencils, and so on. The linotype, which enabled one man to do the work of six, reduced the hours of work from 10 to 8, and put wages up 20 per cent. It improved shop conditions and ensured greater regularity of employment. It eliminated the tramp printer, but ultimately provided more jobs and better jobs for workmen of a higher type.

The introduction of pneumatic tools like the riveter, drill, and stone chisel undoubtedly for a time deprived some men of work, but they so facilitated metal and stone work, the sinking of foundations, and the fabrication of steel structures, that, in America at least, the volume of such work increased so rapidly that many more men soon found employment in the operation of these machines, while the making of the machines themselves became an important industry.

It is significant and heartening to find the following in an editorial by William Green, the President of the American Federation of Labour: "Labour believes there is enough intelligence in industry so that technical change need not be marred by a human scrapheap. The Federation is not opposed to technical progress, but it protests against not working out plans to put changes into effect which cover all interests affected—including workers."

The Impact of Science on Industry

In considering the impact of science upon industry, one's thoughts naturally first turn to electricity. We are within two years of the centenary of those pregnant discoveries of Faraday in the laboratory of the Royal Institution which, for the first time, made possible the production of current by mechanical rotation. Faraday furnished the fructifying idea which in the minds of Wheatstone, the Siemens, Gramme, and Pacinotti soon bore fruit as the dynamo. Upon this machine as its foundation has since been built the great superstructure of the electrical industry with its electric light, power, and traction companies, electrochemical plants, and the manufacturing companies which furnish a bewildering variety of electrical equipment, apparatus and supplies. In 1869 the power at the command of an American workman was $\frac{6}{10}$ horse-power. To-day it is 4¼ h.p., the equivalent of 55 man power, and three-fourths of this is furnished by electricity.

In the absence of statistics I can only hope that your imagination may enable you to form some adequate conception of the multitudinous opportunities for employment which these developments have brought to labour. As a starting point, there is the fact that 300,000 men and women are employed in the 1,700 establishments engaged in making electrical equipment. This has an annual value of 1½ billion dollars, and includes 500 million incandescent lamps.

The Telephone

The telephone is another child of science, and since its birth it has been continuously nourished on research, for which it has developed an amazing appetite. To-day in the laboratories of the Western Electric Co. over 3,900 people, more than half of whom are scientists and technicians, are engaged in telephone research, as distinguished from development. It pays, or it would not continue to be supported by appropriations of more than $13,000,000 annually.

Through the kindness of General John J. Carty, vice-president of the American Telephone and Telegraph Co., I am able to give a definite impression of what the telephone has done for labour: Approximately 400,000 persons are directly engaged in the operation of telephone systems in the United States, and of these about 250,000 are women. About 75,000 more, of whom some 17,000 are women, are directly employed in the manufacture of telephone apparatus. To these must be added 7,500 to 15,000 others whose work is the extraction or fabrication of materials used in telephones and auxiliary equipment. To science, as embodied in the telephone, labour is consequently indebted for something like 500,000 new jobs.

Since 1894, when Sandow, Buffalo Bill and Ruth St. Denis were first recorded on fifty-feet films, the figures of the film industry have reached immense totals. In America alone there are 235,000 employees in this industry, and every day 25,000 miles of film are handled by the exchanges.

In the motor car trade similarly outstanding figures emerge. In the United States the industry employs directly :—

Type of Worker.	Number employed
Motor vehicle factory workers	324,665
Parts and accessory factory workers	300,000
Tyre factory workers	95,000
Motor vehicle dealers and salesmen	363,000
Supplies, accessories, tyres and parts dealers and salesmen	160,000
Garage employees	125,000
Repair shop employees	300,000
Professional chauffeurs	600,000
Professional truck drivers	1,300,000
Gasoline refinery and oil workers	105,000
Automobile financing and insurance	20,000
Total directly employed	3,692,665

Artificial silk has developed from the experimental stage in 1889 to an annual total of 300,000,000 lb. In the United States, upwards of 50,000 operatives are engaged in this industry, and the world figures are of course much greater.

Since chemical industry had its great beginnings here in England one notes with satisfaction that the annual report of Imperial Chemical Industries, Ltd., for 1928 records the fact that this great corporation now employs 53,000 persons.

Mass Production

Mass production is, however, here to stay, and the charge that it is incompatible with beauty cannot be lightly dismissed. Carried along in the flood of its output are many products deserving of a place nowhere but in a Museum of Bad Taste. That, however, is not the fault of the machine, but of the head, for the machine is as truly a tool of the head as the hand itself is. Though we have seemed, æsthetically, to be in danger of domination by the machine, we are beginning to prove ourselves its masters even in this relation. Many machine products are already better than the craftsman's best. Many others have their own distinctive beauty, because of their perfect adaptation to their purpose. The proportion of both seems certain to increase. Whether it does or not, one must agree with Beard in his introduction to *Whither Mankind*, that " those who are prepared to sacrifice the standard of living for the millions to provide conditions presumably favourable to the creative arts must assume a responsibility of the first magnitude."

Dr. Little concluded his address with a significant quotation from Hu Shih, a Chinese traveller and scholar : " To me, that civilisation is materialistic which is limited by matter and incapable of transcending it ; which feels itself powerless against its material environment, and fails to make the full use of human intelligence for the conquest of nature and for the improvement of the conditions of man. . .

" On the other hand, that civilisation which makes the fullest possible use of human ingenuity and intelligence in search of truth in order to control nature and transform matter for the service of mankind, to liberate the human spirit from ignorance, superstition, and slavery to the forces of nature, and to reform social and political institutions for the benefit of the greatest number—such a civilisation is highly idealistic and spiritual."

Dr. Armstrong's Tribute

Dr. E. F. Armstrong proposed a hearty vote of thanks to the president for his address. The Society, he said, was not merely a provincial society, a London society, a British society, or even a British Empire society, for wherever the Anglo-Saxon tongue was spoken, there was its field of activity. With that great principle before it, and bearing the name of *The* Society of Chemical Industry, it had from time to time secured the services of presidents from the United States and Canada. Its senior living past-president, Dr. Nichols, had looked after its destinies at the London meeting in 1905 ; its third senior living past-president, Dr. Bogart, had charmed the members at Liverpool just before the war ; in Glasgow the meeting had been led by Dr. Ruttan, of Montreal ; and in 1929 the members welcomed and acclaimed the presence of Dr. Little, one of the finest types of New Englander.

It was noticeable that Dr. Little spoke our language with little accent, and that fact went to show how closely New England had remained linked with this country. In Dr. Little they saw a missionary, carrying on and fostering that spirit of fraternity of the Anglo-Saxon English-speaking people. If civilisation were to continue, every effort must be used, and no opportunity neglected, to maintain the very closest relations between England and America ; we must go out of our way to understand each other down to the very smallest detail. Last year Mr. Carr, in his self-sacrificing way, had led a band of pioneers through Canada and the United States on that kind of mission, and the members knew how successful it had been. Dr. Little was leading a band which, unfortunately, was not quite so large, but he would take back to America with him a more intimate understanding of what we in this country were thinking, what we wanted to do, and what our problems were, than he could have gathered merely by reading.

Bonds Between Britain and America

It was in that spirit particularly that one welcomed the fraternising of America and England through the medium of the Society. Dr. Little had said that the only thing which had dissatisfied him in England was that he had been described at the port of entry as an alien, and he had stated that he preferred the term " brother " ; the members of the Society preferred to receive him as a " brother."

Commenting further upon the necessity of fostering the spirit of fraternity between the Anglo-Saxon people, he said that, inasmuch as chemists were the most intelligent of all classes of humanity, they must, therefore, make a point of leading in this great mission. In conclusion, he expressed the very warmest thanks to the President for his address, and great appreciation of the honour he had done the Society as its president, and of the way he had come to England to attend this meeting, and wished him an honourable and happy future.

The resolution was carried with acclamation.

Mr. H. Talbot (chairman of Chemical Engineering Group), proposing a vote of thanks to the authorities of the Manchester Municipal College of Technology, said this was no mere formality, and the members of the Society were deeply grateful for all that the College authorities had done and were doing.

A Vote of Thanks to Dr. Levinstein

The President proposed a vote of thanks to the chairman of council, Dr. H. Levinstein, for his services to the Society during the past year, and it was accorded with acclamation.

Dr. Levinstein, responding, said he was only too thankful that he had been able to take over some of the routine duties of the President, if only for the reason that he had thereby enabled Dr. Little to devote more time to the preparation of his presidential address, which had proved to be so perfect in form and so wide in conception, and the preparation of which must have occupied a great deal of time.

Greetings to Monsieur Kestner

At the suggestion of Dr. Levinstein, a telegram was despatched to Monsieur Paul Kestner, of France, conveying the greetings of the Society, in response to the good wishes conveyed by Mr. Calder from Monsieur Kestner. Dr. Levinstein pointed out that Monsieur Kestner was an honorary member of the Society, was very closely associated with the chemical industry in this country, and had shown very great kindness to representatives of the Society when they had visited France on official business.

The meeting then adjourned for luncheon.

The Luncheon

The members of the Society were entertained to luncheon by the Manchester Section of the Society, in the Banqueting Hall of the Midland Hotel. Mr. C. J. T. Cronshaw (chairman of the Section) presided.

The President, proposing the toast of " The Chairman and Members of the Manchester Section," expressed on behalf of the members of the Society generally their deep appreciation of the bounteous hospitality extended to them. Speaking on behalf of himself and Mrs. Little with regard to their visit to this country, he said they had been touring Southern England, and had visited more cathedrals than they had thought existed, with the result that they had no very clear conception of any individual Cathedral, but had retained in their minds a most beautiful composite picture of English cathedrals. In the same way, they had met so many kind friends that they had become somewhat confused also in that

respect, but they retained in their minds the most beautiful composite picture imaginable of friendly Englishmen.

Dr. L. V. Redman

Dr. L. V. Redman (Chicago), supported the toast. In the course of an amusing speech, he said that the members of the Society attending the meeting had come from many parts of the earth, and spoke a common language, although some said "la-bor-atory" and other "lab-or-atory"; there was also some little distinction in their pronunciation of the word "research," and sometimes there was a little confusion when those who came from the ends of the earth asked for an elevator when they should have asked for a lift.

Referring to Manchester, which was said to be the most densely populated part of the world, he said that, had the Americans been there, they would have drawn a circle with a radius of about 50 or 100 miles around the city and would have called it Greater Manchester, and would then have declared that it was the largest city in the world (laughter). He was filled with enthusiasm when he realised that in Lancashire there were some 50,000,000 spindles on 800,000 looms, producing something like 25 per cent. of the total export of Great Britain.

Commenting on the companionship of such meetings as this, and the stimulating effect upon those attending, he said that, if other sections abroad had the opportunity in the future to reciprocate and imitate the kindness which had been bestowed upon the visitors to Manchester, those sections would be prepared to do so. The Manchester Section had entertained the visitors so magnificently, unostentatiously and imperturbably, that they were the envy of most of those whose slogan was "don't forget to hustle." He had come from Chicago, which was a city much like Manchester, and (he added in response to the laughter to which his remark gave rise), that was not really so great a joke as it appeared to be. The farther one came from the west the surer one became of the truth of the wit who had said that the farther west he travelled the surer he was that the wise men came from the east (laughter).

Mr. Cronshaw, responding, said that the committee of the Manchester Section had even arranged for some fine weather during the period of the meeting, but had only arranged for it up to the time of the luncheon, because they had felt that it was necessary to maintain the fine weather only until there had been a proper sort of response (laughter). He had understood the President to say, in the course of his Presidential address, that the reason for America's prosperity was that it had 28 cities named Manchester, and he had gathered subsequently that the President felt that the English nation was so far behind because it had only one Manchester.

Visits to Works

Tuesday afternoon was devoted to visits to works, which included the docks of the Manchester Ship Canal, the laboratories of the British Cotton Industry Research Association, the works of the British Oxygen Co., and those of Charles Macintosh and Co., Ltd.

In the evening there was a civic reception by the Lord Mayor and Lady Mayoress (Colonel and Mrs. G. Westcott), and the City Corporation, at the Town Hall.

"The Soul of Manchester"

In connection with the annual meeting of the Society of Chemical Industry at Manchester, the Manchester University Press, on behalf of the Manchester Section of the Society of Chemical Industry, has published a book entitled *The Soul of Manchester* (pp. 280, 6s.), edited by Dr. W. H. Brindley. The book contains a number of chapters, each written by a different author, dealing with different aspects of Manchester life. Among others, the contributors include Sir Henry Miers, F.R.S.; Principal B. Mouat Jones; Professor A. Lapworth, F.R.S.; John Allan; and Dr. R. H. Pickard, F.R.S. Subjects of special interest to chemists are "Technology in Manchester"; "Chemistry and Manchester University"; "What Chemistry has Meant to Industry in Manchester"; and "Manchester and Cotton." The volume is well printed and produced, embellished by a number of photographs and portraits, and altogether a great credit to the Manchester Section.

Exhibition of Scientific Apparatus at Manchester

An exhibition of scientific apparatus, optical and other instruments in relation to textile science and technology, was held at the Textile Institute, Manchester, from Tuesday to Friday. E. Leitz (London), of 20, Mortimer Street, London, exhibited microscopes with ball-bearing, fine-adjustment slides; stereoscopic binocular magnifiers; thread counters: and colorimeters (new universal type) for Duboscq and Burker methods (micro and nephelometric attachments). The Lea Recorder Co., Ltd., of 28, Deansgate, Manchester, exhibited Lea water recorders for measuring the flow of water over V-notches and weirs of any kind. The chief applications of these recorders as applied to manufacturing industry are the measurement of boiler feed water, condensates, chemical liquors, trades waste, pump discharges, etc. Lea coal meters for measurement of coal on chain grates and other types of mechanical stokers, and Lea coal meters for the measurement of coal or other materials in bulk (and pulversised coal) were also shown. Kelvin, Bottomley and Baird, Ltd., of Imperial House, Regent Street, London, showed the K.B.B. fugitometer (for testing the fastness of dyed materials to light) and the K.B.B. fluorescence cabinet (for the analysis of materials by ultra-violet light). The Tintometer, Ltd., of the Colour Laboratory, Salisbury, showed the Lovibond tintometer, the binocular tintometer, and the Rosenheim-Schuster tintometer. The Thermal Syndicate, Ltd., of Vitreosil Works, Wallsend-on-Tyne, showed Vitreosil laboratory ware, muffles and tubes, lenses, etc. Adam Hilger, Ltd., of 24, Rochester place, Camden Road, London, showed the Mutochrome (an instrument for the production of coloured designs) and the Guild trichromatic colorimeter.

Accurate Analysis of Gas Mixtures

For certain purposes extremely accurate analysis of gas mixtures is necessary. One difficulty with usual methods of gas analysis is found in the deviation of gases like carbon dioxide from the gas law. In the analysis of hydrocarbons this results in serious error in the determination of the carbon dioxide contraction ratio. Other errors result from the solubility of gases in absorbing solutions, inaccurate gas burettes, poor meniscus in the burette due to dirty mercury, adsorption and occlusion of gases in the copper and copper oxide in the combustion tube, uncertain temperature and volume of dead space in the manifold, leaks and absorption of gases through stopcock grease and rubber tubing, etc. The Pittsburgh Experiment Station of the United States Bureau of Mines, Department of Commerce, has developed a gas analysis apparatus with which it is hoped to eliminate most of the usual uncertainties. Although for a rapid and convenient analysis the standard types of apparatus are probably about as satisfactory as can be hoped for, a more accurate method is desirable in particular instances, even though the labour involved in analysis is more than would be desirable in routine analyses.

Low Grade Fuel for Steam Generation

In connection with the operation of steam boiler plants on the principle of utilising all the lower grade fuel that may be available, a striking example is supplied by the results now being obtained at a well-known colliery in the North of England. The normal method of working was to burn unscreened lump coal in the "Lancashire" boilers, with cold feed water and no economisers, and long-continued tests showed that the average performance was an evaporation of 5·2 lb. of water per 1 lb. of coal. The plant was then equipped with "Turbine" forced draught furnaces, and the results were, as shown by a further series of records, all carried out by the colliery staff themselves, an average of 7·60 to 7·96 lb. of water per 1 lb. of coal. Subsequently, however, the plant was overhauled generally and the boilers scaled, with the result that a much cheaper fuel, smalls from the washery plant, was used instead of unscreened lump coal. The full supply of steam was supplied as before, since the lowest quality of fuel is easily burnt by the "Turbine" furnace, and the results average 8 lb. of water evaporated per 1 lb. of coal, being an enormous net saving as compared with the original figure of 5·2 lb. with more expensive coal.

Indian Chemical Notes

[From Our Indian Correspondent.]

Lac dye is a by-product in the washing processes necessary for the refining of seed lac. In the dry state, it is an amorphous red substance. It was formerly used as a dyeing material for cotton and silk goods, but owing to the advent of the more efficient aniline dyes it is no longer used as such. The material is now almost entirely wasted. No other industrial use for it has been found, though large quantities of it are available in the lac-refining centres. It is known that this material has fertilising properties, it having the following analysis: Nitrogen, 2·68 per cent.; phosphoric anhydride (P_2O_5), 0·33; and potash (K_2O), 0·74 per cent.

Forest Research at Dehra Dun

Forest research at Dehra Dun made notable progress during the past year. Perhaps the more important investigation now in progress is the possibility of using bamboo pulp for the manufacture of artificial silk. Should success attend the experiment it will be one of the most encouraging discoveries made in India for some time.

An inquiry was conducted to ascertain the reason for the large fall in the price now being obtained for palmarosa oil (*Cymbopogon Martini*). It was ascertained that there has been increased production of the true geranium (Pelargonium) oil in the French colonies of Réunion and Algeria, and that cheap synthetic products having a geranium odour are now available on the market with a consequent fall in the price of geranium oil. This fall in the price of true geranium oil has had its effect on palmarosa oil, and it would appear that no marked recovery in the price of the latter can be expected.

The Tariff Board

The Tariff Board is now engaged in writing its report on the inquiry recently conducted by it into the claims of the chemical industry for protection. It is stated that special attention will be given to artificial fertilisers in which sulphuric acid is used. As the Madras Presidency is the largest consumer of superphosphates in India, protection to that product is likely to affect that Presidency more than any other province. The surmise is, if the Tariff Board decide to give protection to superphosphates in India, it will be in the form of a bounty rather than a duty.

Imports of Artificial Silk

The total imports of artificial silk into India in the year 1928–29 amounted to Rs. 477 lakhs, against Rs. 548 lakhs in the previous year. The imports of yarn amounted to 7·6 million lb., the same as in the previous year, the reason for the absence of increase being the general strike in the Bombay mills during the year. Imports from the United Kingdom fell from 2·2 million lb. to 1 million lb., but those from Italy rose from 3·4 to 3·6 million lb. Imports of mixed piecegoods declined from 53 to 49 million yards, the United Kingdom's share falling from 14 to 12 million yards and Italy's share rising from 16 to 17 million yards

Imports of Salt

The imports of salt into India in the year 1928–29 were valued at Rs. 146 lakhs, against Rs. 175 lakhs in the previous year, but the actual quantity imported rose from 596,000 tons to 614,000 tons. The prices during the year fell considerably. It is only Burma and Bengal that require imported salt, the quantity purchased by them during the year being 80,000 tons and 533,000 tons respectively. The imports into other provinces are practically nil, as they are self-supporting. As to the origin of these imports, the share of the United Kingdom fell from 81,000 tons to 69,000 tons, that of Spain from 83,000 to 58,000, of Egypt from 123,000 to 114,000 tons, and of Italy from 56,000 to 51,000 tons. The imports from Germany and Aden increased, the former from 56,000 to 64,000 tons and the latter from 180,000 to 204,000 tons.

The Trade in Chemicals

The import trade in chemicals in the year 1928–29 amounted in value to Rs. 247 lakhs, against Rs. 264 lakhs in the previous year. Soda compounds amounted to Rs. 120 lakhs, *i.e.*, about half the value of the trade. The imports of acids were valued at only Rs. 8½ lakhs, bleaching materials at Rs. 12 lakhs, disinfectants at about Rs. 10 lakhs, ammonia and salts at about Rs. 9 lakhs, potassium compounds at Rs. 13 lakhs, magnesium compounds at Rs. 3 lakhs, lead compounds at Rs. 3 lakhs, and zinc compounds at Rs. 2½ lakhs. The imports of sulphur declined from 387,000 cwt., valued at Rs. 19 lakhs, to 300,000 cwt., valued at Rs. 16 lakhs. The imports of China Clay, which are not included in the above figures, were valued at Rs. 9 lakhs only, as against Rs. 18 lakhs in the previous year. The cause of this decline cannot be stated, except that a partial explanation may be found in the closing of the Bombay mills for five months owing to general strike.

Drugs and Medicines

The value of the import trade in drugs and medicines rose from Rs. 198 lakhs in 1927–28 to Rs. 204 lakhs in 1928–29. The imports of camphor rose from 26 lakhs to 28 lakhs, out of which Rs. 18 lakhs worth came from Japan and Rs. 8 lakhs worth came from Germany. The imports of proprietary and patent medicines were valued at Rs. 42 lakhs, an increase of Rs. 13 lakhs over the previous year. Quinine salts were valued at Rs. 24 lakhs, morphia and its preparations at about Rs. 1½ lakhs, and cod liver oil at Rs. 1 lakh. About half the total imports are recorded under the class "other sorts," and their value during the year amounted to Rs. 100 lakhs.

Cement, Explosives, etc.

The total of building materials imported in 1928–29 amounted in value to Rs. 121 lakhs. Asphalt was valued at Rs. 20 lakhs and cement at Rs. 68 lakhs, the latter imports showing an improvement in quantity from 112,000 tons to 127,000 tons. Out of this quantity, 90,000 tons came from the United Kingdom, 14,000 tons from Japan, and about 5,000 tons from Germany.

The value of imported explosives was Rs. 27 lakhs. Blasting fuse was valued at Rs. 7 lakhs, blasting gelatine at Rs. 3 lakhs, dynamite at Rs. 3 lakhs, gelatine dynamite at Rs. 9 lakhs, and detonators at Rs. 2 lakhs.

The value of asbestos was Rs. 33 lakhs, almost wholly in the form of manufactures, of which Rs. 4 lakhs' worth was asbestos packing. Gums and resins were valued at Rs. 39 lakhs. Paints and colours were valued at Rs. 112 lakhs, of which Rs. 80 lakhs' worth came from the United Kingdom.

Tariff Demanded for Methylated Spirit

A Calcutta firm (Carew and Co.) have submitted a representation to the Tariff Board, stating that a tariff inequality exists in India in regard to the manufacture of denatured or methylated spirit, as a result of which the industry is placed at a disadvantage in competing with imported spirit. The principal materials from which spirit is made in India is imported liquid or hard molasses, the duty on which is 25 per cent., while the duty on imported denatured spirit is 7½ per cent. The company claims that a case for relief would be established if the necessary inquiry were made, and demands that the relief should be granted to the industry either by remission of duty in whole or in part on imported molasses used in the manufacture of denatured spirit, or, alternatively, by the reduction of the duty on molasses imported for distillation to 15 per cent. The inquiry will be taken up by the Board shortly.

The total imports of spirits into India in 1928–29 amounted to 2·1 million gallons, valued at Rs. 226 lakhs, of which the United Kingdom was responsible for Rs. 136 lakhs. The imports from France were valued at Rs. 52 lakhs, and those from the United Provinces at Rs. 17 lakhs.

Imports of Fertilisers

The import trade in fertilisers has shown remarkable increase, as was expected. The total value rose from Rs. 47 lakhs in 1927–28 to Rs. 73 lakhs in 1928–29. The value of the sulphate of ammonia imported rose from Rs. 6 lakhs to Rs. 28 lakhs, a remarkable rise, indicating the very rapid spread of its use all over India. In fact, this fertiliser has given uniformly good results everywhere. Potassium chloride imported was valued at Rs. 7 lakhs, nitrate of soda at Rs. 12 lakhs, and others at Rs. 21 lakhs. The imports of fish manures amounted to Rs. 3 lakhs. The total value of fertiliser trade, which was only Rs. 20 lakhs five years ago, is now Rs. 73 lakhs, and one may be sure that it will increase rapidly, considering the new spirit of progress among Indian agriculturists. Propaganda, however, both by the Government and the fertiliser firms, should be as brisk as possible.

S.G.W.

British Trade in Malaya

Chemicals, Drugs, Dyes and Colours

IN the review just published of the trade of British Malaya in 1928, by Mr. L. B. Beale, H.M. Trade Commissioner (H.M. Stationery Office, pp. 90, 3s.), there is an interesting section from which the following extracts are taken :—

Chemicals, Drugs, Dyes and Colours

	1925	1926	1927	1st 6 mths. 1928
	$	$	$	$
Total imports ..	15,628,084	22,259,650	21,592,903	9,086,930
Of which from—	%	%	%	%
United Kingdom ..	20	17	18	21
British Empire ..	54	55	61	55
Europe	13	9	8	11
United States ..	2	2	2	3
Japan	5	4	5	5
Other	7	14	5	5

Included in this group is opium, the imports of which were valued in 1927 at $7,300,000, all from India, which accounts for the high percentage in the above table allotted to " British Empire." If opium is omitted, the share secured by the United Kingdom amounted to approximately 28 per cent. in 1927, which, taking all circumstances into consideration, is fairly satisfactory.

Apart from opium the principal items included in this group are :—

Acetic Acid.—Imports in 1927 valued at $747,447—the Netherlands, Italy and Germany securing practically the whole of the trade.

Sulphuric Acid.—The imports are small ($105,483 in 1927), 80 per cent. is secured normally by Japan, but this year (1928) on account of the boycott of Japanese goods, much of the business is being secured by the United Kingdom. Importers state that when the boycott is lifted the trade will revert to Japan on account of price.

Other Acids.—Total imports in 1927, $196,690. The share of 21 per cent. secured by the United Kingdom in 1925 declined to 13 per cent. in 1927. Germany now secures 17 per cent. compared with nil in 1925, and the Netherlands' share has increased from 41 per cent. in 1925 to 58 per cent. in 1927. Price determines the trade and the United Kingdom appears unable to meet Continental competition.

Disinfectants.—This trade increases year by year and imports in 1927 were valued at $249,090. The United Kingdom secures 96 per cent. of the entire trade. The United Kingdom interests are in capable hands, and, if present methods are continued, no change in the source of supply should occur.

Soda and Sodium Compounds.—The imports of this item increase steadily year by year, and in 1927 amounted to $327,009, of which the United Kingdom secured 87 per cent. compared with 96 per cent. in 1925. Belgium, France, Germany and the United States together now supply 12½ per cent. of the imports, and are making still further increases this year.

Other Chemical Manufactures.—This item covers many chemical lines imported, amounting in 1927 to $2,057,658. The United Kingdom is steadily increasing her share and now secures one-third of the total with prospects of still further increases. Japan normally is the second largest source of supply, low freight rates and costs of production contributing to this result. British interests are well looked after in Malaya, but price will continue to be the determining factor.

Drugs and Medicines.—The market is a heavy importer of medicines of all kinds. Imports in 1927 were valued at approximately $3,000,000, of which the United Kingdom secured almost 40 per cent., a share similar to that of the past three or four years. Indications are that the United Kingdom will hold, and possibly increase, her share in the future.

Dyes—Aniline, Indigo (synthetic) and other Dyes.—In the items under the above heading imports in 1927 were valued at $335,000, of which 40 per cent. was supplied by Germany and 11 per cent. by the United Kingdom. Germany has taken this trade from the Netherlands, while the United Kingdom share shows a small decline in recent years. The market favours the German product, and unless the unforeseen happens, Germany will still further increase her share.

Paints

	1925	1926	1927
	$	$	$
Total imports	1,626,340	1,690,728	1,947,694
Of which from—	%	%	%
United Kingdom ..	85	80	78·5
Germany	1	—	1
Netherlands	—	—	2
Japan	9·5	11·5	12
United States	2	3·5	4

This valuable import trade is mainly in the hands of the United Kingdom, and although for the three years ending 1927 a small decline is recorded in respect of the share secured by the United Kingdom, present indications are that approximately 90 per cent. of the entire trade in 1928 will be British. This has been brought about not only by the boycott of Japan, but by the ability of the United Kingdom to compete with Japan in the cheaper enamels. Distribution of British paints is in very good hands in Malaya.

Oils, Fats and Resins

	1925	1926	1927	1st 6 mths. 1928
	$	$	$	$
Total imports ..	101,233,362	112,848,375	112,991,406	53,782,492
Of which from—	%	%	%	%
United Kingdom	2	2	3	3
British Empire	25	19	18	16
Europe	—	—	—	—
United States ..	4	4	6	5·5
Japan	—	—	—	—
Other	69	74	73	74

Soaps

	1925	1926	1927
	$	$	$
Total imports	495,130	447,577	536,602
Of which from—	%	%	%
United Kingdom	59	53·7	54
France	8·5	10	7
Germany	7	5	7
China	3	5	6
Japan	3·5	3	4
United States	9	12	9·5
Java	3	6	7

In view of the keen competition, the United Kingdom share of over 50 per cent. of the total imports is regarded as fairly satisfactory, although in 1923 the United Kingdom secured 73 per cent. of the trade. The United Kingdom toilet soaps have firmly established " chops " and their distribution is very efficiently carried out. During 1928, Germany has been quite aggressive with medium priced toilet soaps and has made some gains.

Other Soap.—This is a valuable import trade and was valued at $2,424,170 in 1927, when the United Kingdom secured 86 per cent. (an increasing share) of the total and Australia 12 per cent. (a steadily declining share). Chinese manufacturers have now established soap-making plants in British Malaya under the direction of a German expert. They are turning out soaps of fair quality, but find it difficult to displace the old-established British " chops." In order to secure a footing in the trade, the Chinese soap interests place stocks on consignment in Chinese retailers' hands. They are making some headway and will in time become a serious factor in the trade.

Australian Fertiliser Merger

A NEW company, Commonwealth Fertilisers and Chemicals, Ltd., has been incorporated in Melbourne to amalgamate, in the first place, the fertiliser interests in Victoria of Cuming Smith and Co. Proprietary, Mount Lyell Mining and Railway Co., Wischer and Co. Proprietary, Ltd., and Nobels (Australasia), Ltd. The capital of the new company will be £7,000,000, and the properties were taken over as from July 1. The initial issue of shares in exchange for the assets taken over will be about £2,500,000. The annual capacity of the works is 300,000 tons and the present production is 250,000 tons. The directors are W. F. Cuming, managing director, and Alexander Stewart, Colin Templeton, P. C. Holmes Hunt, Paul Wischer, and Sir Lennon Raws. The general manager is Mr. T. W. Haynes. An account of the history of the constituent firms of the merger (except Nobels) was given in THE CHEMICAL AGE of June 15 (p. 560).

A Bookman's Column

THE Society of Chemical Industry has just published Volume XIII (1928) of its *Reports on the Progress of Applied Chemistry* (pp. 741). This volume is produced in the usual thorough manner, the writers of the various sections being as follows: "General, Plant and Machinery," Dr. A. J. V. Underwood; "Fuel," H. J. Hodsman; "Gas, Carbonisation, Tar, and Tar Products," H. Hollings; "Mineral Oils," Dr. A. E. Dunstan; "Colouring Matters and Dyes," C. Hollins; "Fibres, Textiles, Cellulose, and Paper," J. C. Withers; "Bleaching, Dyeing, Printing, and Finishing," L. G. Lawrie; "Acids, Alkalis, Salts, etc.," C. J. P. Bateson, H. M. Broadhurst, A. Lamble, and A. Williams; "Glass," H. W. Howes; "Refractories, Ceramics, and Cements," W. J. Rees; "Iron and Steel," Dr. W. H. Hatfield; "Non-Ferrous Metals," A. R. Powell; "Electro-Chemical and Electro-Metallurgical Industries," Dr. H. T. S. Britton; "Oils, Fats, and Waxes," Professor T. P. Hilditch; "Paints, Pigments, Varnishes, and Resins," Oil and Colour Chemists' Association; "India-Rubber," Dr. D. F. Twiss; "Leather and Glue," F. C. Thompson; "Soils and Fertilisers," Dr. E. M. Crowther; "Sugars, Starches, and Gums," L. Eynon and J. H. Lane; "The Fermentation Industries," H. Lloyd Hind and F. E. Day; "Foods," F. S. Aumonier and J. King; "Sanitation and Water Purification," J. Haworth; "Fine Chemicals, Medicinal Substances, and Essential Oils," Dr. W. H. Linnell; "Photographic Materials and Processes," Dr. E. P. Wightman; and "Explosives, 1927–28," J. Weir.

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In *Glue and Gelatine* (Sir Isaac Pitman and Sons, pp. 162, 8s. 6d.), the author, Mr. P. I. Smith, has "attempted to treat the subject from a number of different angles—the glue manufacturer's, the tanner's, and the chemist's, as well as the general consumer's." The aim is not to supplant the standard text-books, but to supplement them. The chapter headings are as follows: Early history of glue; the raw materials for glue; the chemistry of proteins; raw materials for gelatine and isinglass; preservation of stock by the glue manufacturer; filtration, classification, evaporation, cooling and drying; analysis of glue and gelatine; the applications of glue; the uses of gelatine in the manufacture of foods; gelatine in photography and photo-lithography.

* * *

With publication in the present year, *The Chemist's Year Book* (Sherratt and Hughes, pp. 1186, 21s.) reaches its fourteenth edition. The main changes in the present edition are the rewriting of the section on "Dairy Chemistry," by G. D. Elsdon and J. R. Stubbs, and the complete revision of the section on gas analysis. General revision of the other sections has been carried out as usual.

* * *

The Institution of Petroleum Technologists has just published the second (revised) edition of *Standard Methods of Testing Petroleum and Its Products* (pp. 139, 7s. 6d.). This volume is really the Report of the Standardisation Committee of the Institution of Petroleum Technologists, and gives standard methods for testing gasoline, benzole mixtures, white spirit (turpentine substitute), kerosene, long-time burning oil, gas oil, mineral lubricating oils, transformer and switch oils, fuel oils, asphaltic bitumens and asphaltites, commercial paraffin scale and refined paraffin wax, and crude petroleum, with specifications of apparatus, etc., together with recommendations regarding sampling. Numerous blank pages for notes are interleaved.

* * *

Theodor Steinkopff, of Dresden, has just published a book (in German) on *Anorganische und Organische Entfärbungsmittel* (Inorganic and Organic Decolorising Agents), by Dr. L. Singer (pp. 251, bound 21.5 marks, paper-covered 20 marks). The subject is dealt with as follows: Properties of earths and carbons; the theory of bleaching and decolorising; decolorisation by adsorption in the oil industry (especially mineral oil); the production of bleaching agents; the application of bleaching agents; the regeneration of decolorising agents. This monograph, dealing as it does with a subject of great and growing importance, should be of considerable interest to chemists.

Electricity Station Fumes

Appeal Continued

THE hearing of the appeal of the Lord Mayor and Corporation of Manchester *v.* Farnworth was continued in the House of Lords on Tuesday. It arose out of a claim by Mr. Arthur Farnworth for damages and for an injunction to restrain the Corporation from causing to issue from their electrical power station at Barton-upon-Irwell, in the county of Lancaster, poisonous smoke fumes, gases, and noxious matter, in such a manner that they spread over Mr. Farnworth's farmhouse and buildings and over the land farmed by him. The contention of the Corporation was that by virtue of the Manchester Corporation Act they were entitled to erect and use the generating station, even though they could not do so without causing a nuisance to Mr. Farnworth.

Lord Dunedin: Of course, Parliament can do what it likes, but it is almost comic to think that it put in a nuisance clause for the ordinary supply to the ordinary customer, and kept out the nuisance clause in respect of the one thing which is likely to be a nuisance.

Mr. Cyril Aktinson, for the Corporation, submitted that if the Legislature authorised the doing of a particular thing in a particular place it authorised it even if the doing of it were accompanied by a nuisance.

The hearing was adjourned.

Deaths by Gas Poisoning

Committee of Inquiry Appointed

THE President of the Board of Trade has appointed a committee to consider the increase during recent years in the number of deaths ascribed to poisoning by coal gas supplied for domestic purposes, and to make recommendations as to any measures, relating to the production and use of gas for domestic purposes, which might be taken with a view to diminishing the number of such deaths. The committee consists of the Right Hon. Sir Evelyn Cecil (chairman); Sir John Robertson; Professor R. V. Wheeler; and Mr. F. J. Wrottesley, K.C., with Mr. H. L. Spencer, of the Board of Trade, Great George Street, Westminster, as secretary. Sir Evelyn Cecil, after 31 years' membership of the House of Commons, was not a candidate at the recent general election. He has been chairman of a number of Parliamentary and departmental committees. Sir John Robertson is Professor of Public Health at Birmingham University, and has been Medical Officer of Health for Birmingham and Sheffield and Medical Officer of Heath and Public Analyst for St. Helens. Professor Wheeler is Professor of Fuel Technology at Sheffield University, and Director of the Safety in Mines Research Board Experimental Stations. Mr. Wrottesley is a member of the Parliamentary Bar.

Large Pottery Combine

AN amalgamation of twenty firms in the English china trade at Longton, Stoke-on-Trent, the home of the industry, has taken place. The new combine, which has been brought about by a London financial syndicate, will be known as the English China Corporation, and will have a capital of at least £1,000,000. Most of the large firms in the Longton district are included in the merger, but there are a number of firms remaining outside with whom negotiations are still proceeding. One of the principal objects of the corporation will be the erection of a large up-to-date factory for the manufacture of all grades of English china at Longton. A special research department will be established, where attention will be paid to problems of firing and size. It is expected that the combine will be in operation by September.

I.C.I.: German Reports of Developments

VARIOUS reports regarding the activities of Imperial Chemical Industries appear in the German technical Press. The development of the mercury mines at Kaikohe, North Auckland, New Zealand, is said to have proceeded so far that production will commence in three months; and it is suggested that after the extensions at Billingham have been completed, the company will build a great synthetic fertiliser plant in Australia, at a cost of £5,000,000.

U.S. Production of Potash

Figures for 1928

POTASH produced in the United States in 1928 amounted to 104,129 short tons of potassium salts, containing 59,910 short tons of K_2O. Sales by producers amounted to 105,208 tons of potassium salts, containing 60,370 tons of K_2O. The potash materials of domestic origin, sold by producers in 1928, were valued at $3,029,422 f.o.b. plants. About 6,260 tons of potassium salts, with an available content of 2,100 tons of K_2O, remained in producers' stocks at December 31, 1928. The output increased 35·5 per cent. in gross weight, with an increase of 38 per cent. of K_2O content. The sales of salts increased 11 per cent., with an increase of 22 per cent. in K_2O content. The total value of the sales increased 24 per cent. Stocks remaining in the hands of producers at the end of 1928 were 14 per cent. less than at the end of 1927. The production was chiefly from natural brines in California and distillery residue from molasses in Maryland. Small amounts were also obtained from steel plant dust in Pennsylvania and Virginia, and Steffen's water in Indiana. A small amount of alunite was shipped from Marysvale, Utah, but it was not utilised other than for experimental work.

The potassium salts imported for consumption into the United States in 1928, according to the United States Bureau of Foreign and Domestic Commerce, amounted to 975,661 short tons. This represents an increase of 33·5 per cent. in gross weight over the imports for 1927. The estimated K_2O equivalent of these imports is 330,000 short tons. The total value of the imports was $22,519,992, which was 22·5 per cent. more than for 1927. The potassium salts imported chiefly for fertiliser amounted to 931,616 short tons (K_2O content approximately 310,000 tons), valued at $18,227,830. This was an increase of 35·5 per cent. in total quantity, and 38 per cent. in value.

Spanish Potash Exploitation

ACCORDING to reports, the work of exploitation of the potash deposits at the Cardona Mines is well advanced, particularly in the Alberto shaft, which has now reached a depth of 700 metres. It is stated that as the shaft increases in depth the richness of the deposits also increases. The sinking of the shaft is progressing at the rate of 50 metres a month, and, taking into consideration the length of time that is needed for the construction of the galleries, it is estimated that between September and the end of the year the mine will be in condition to produce. The aerial cable is already constructed, the wagonettes are ready for the transportation of the salt to Suria, the grinding mill is ready for use, and deposits and other necessary buildings are in course of construction. The Cardona mines are being exploited by the Union Espanola de Explosivos. As an interesting detail it may be noted that there is a great demand for the common salt supplied by the seams in the Cardona Mines which are level with the ground. It sells at 54 pesetas a ton.

Overseas Chemical Trade for June

THE Board of Trade Returns for June indicate that imports of chemicals, drugs, dyes, and colours for the month ending June 30 were valued at £1,190,531, an increase of £20,980 on the corresponding period of 1928; exports were valued at £1,843,941, a decrease of £341,561; and re-exports at £129,783, an increase of £49,983. For the six months ending June 30, imports were valued at £7,911,711, an increase of £49,014; exports at £12,743,402, a decrease of £82,492; and re-exports at £491,344, an increase of £5,998. A detailed account will appear next week.

The Alkali Trade of Norway

THE paper industry is the largest consumer of alkalis in Norway. There is some demand from the glass and soap factories, which may be considered rather stationary; only one new glass bottle factory (at Mosa) has come into production during the past year. Entirely equipped with automatic American machinery, it has a daily capacity of approximately 50,000 bottles. The paper industry is expanding its productive capacity constantly.

Chemical Notes from Westminster

Questions in the House

COLONEL HOWARD-BURY (House of Commons, July 8) asked the Secretary of State for Foreign Affairs whether he had had any further communications with the French Government with regard to the Dead Sea concession. Mr. Henderson stated that in answer to the Note sent to the French Ambassador, a communication was recently received from his Excellency inquiring on behalf of his Government whether His Majesty's Government would be prepared to submit the question at issue to the Permanent Court of International Justice. The reply to be made to this communication was now under consideration by His Majesty's Government, and, pending the completion of the correspondence, he was unable to make any further statement on the subject. In reply to a further question, he added that he was not aware whether M. Novomeysky had been served with an injunction which prevented him working this concession until the matter had been decided by the International Court of Justice.

The Prime Minister (House of Commons, July 9) in reply to Brigadier-General Brown, said that in view of the recent ratification of the Geneva Gas Protocol of 1925 by most of the important European States, including this country, he did not think this was a moment to press local authorities to develop plans for the protection of the civil population against gas attack. Much preparatory work had, however, been done by the Committee of Imperial Defence on this problem prior to the ratification of the Protocol, and that work would not be thrown away if, unfortunately, a situation should arise hereafter requiring as a measure of prudence the development of plans for this purpose.

In reply to a question by Mr. Mander (House of Commons, July 9), as to whether it was the intention of the Government to allow the Dyestuffs Act to expire at its termination on January 15, 1931, Mr. W. Graham said that this matter would receive consideration in due course.

The Science of Steam Generation

New Boiler with 1,390 lb. per Square Inch Pressure

ONE of the most remarkable boiler plants in the world is at present being erected for Synthetic Ammonia and Nitrates, Ltd., at Billingham, and now we learn that the Milwaukee Electric Railway and Light Co. are this year spending 1,500,000 dollars at their Lakeside Power Station, the chief item being a new boiler to operate at 1,390 lb. per square inch pressure, costing with accessories 725,000 dollars. This boiler is being manufactured by the International Combustion Engineering Corporation, and includes the latest design of "Lopulco" pulverised fuel firing. As at Billingham, heavy forged steel drums are to be used, while the superheated steam temperature is 750° F., and the normal evaporation is 300,000 lb. of steam per hour, "Lopulco" steel tube water-cooled fin tube walls and "Usco" multiple plate air heaters also forming part of the equipment.

The general arrangement, following upon the first installation at Lakeside, is to pass steam at 1,390 lb. pressure to special small very high-speed turbines exhausting into the mains at the normal station pressure, and this new high-pressure boiler will generate energy equivalent to about 40,000 h.p. With regard to the buildings, the boiler house extensions are 92 ft. square and 108 ft. high, housing the boiler in addition to the switchboard building, expansion of coal handling equipment, and other accessories, while there is also to be erected an additional chimney, 198 ft. high and 23 ft. diameter at the bottom and 19 ft. at the top. Lakeside was extended towards the end of 1928 to a total generating capacity of 235,000 kw, by the addition of one normal pressure turbo-generator of 60,000 kw and one high pressure of 7,700 kw, and the above boiler plant will bring the steaming capacity up to the full output of the generators.

Appointments Vacant

ASSISTANT LECTURER (Physical Chemistry) in the Chemistry Department of the University of Birmingham.—The Secretary, The University, Edmund Street, Birmingham. July 31.

From Week to Week

BROMINE is now being produced at the rate of 80–100 kg. per day from the mother liquors of the great Regina Margherita salt works in Sicily.

THE DURALUMIN PATENTS owned by the Dürener Metallwerke A.G., of Germany, will expire next year. This fact was stated officially at the general meeting of the company recently.

THE EXTRACTION OF RADIUM from South and South-West African ores is to be undertaken by a company now in process of formation in South Africa. The capital of £1,000,000 will be half British and half American.

JOSEPH HARDMAN, aged 33, of Frederick Street, Middlesbrough, an erector employed at the Synthetic Ammonia and Nitrate Works, Billingham-on-Tees, died at the North Riding Infirmary on Thursday, July 4, as the result of injuries sustained in a fall from a scaffold.

THE EASTMAN KODAK CO. is said to be negotiating for a working agreement with the Glanzstoff and Bemberg rayon concerns, both of which are said to have large interests in the Eastman Kodak Co. The latter is believed to be planning the erection of a large cellulose acetate plant.

H.M. CONSUL at San Salvador (Mr. D. J. Rodgers) has forwarded to the Department of Overseas Trade a memorandum on the market for paints, varnishes, etc., in Salvador. British firms desirous of receiving a copy of this memorandum should apply to the Department of Overseas Trade, 35, Old Queen Street, London, S.W.1. Reference No. BX. 5,449 should be quoted.

THE CONSUMPTION OF OXYGEN for cutting and welding by the Tata Iron and Steel Co., at Jamshedpur, India, has increased over 40 per cent. in recent years. Before their requirements grew to such proportion, supplies were obtained from their nearest factory at Calcutta. As this is considered uneconomical for present supplies, an oxygen plant is under construction at Jamshedpur.

DR. BUEB, chairman of the German Nitrogen Syndicate, who was responsible for the negotiations between the Chilean nitrate producers and the I.G., will resign his post at the end of the year, and will presumably join the advisory board of the Syndicate. His place as chairman will be taken by Dr. Heinrich Oster, chief of the I.G.'s Leuna works (where synthetic nitrogen compounds are produced).

CHLOROPHYLL has been identified in that part of peat which is soluble in acetone, in the course of research now being conducted at the Pittsburgh Experiment Station if the United States Bureau of Mines, Department of Commerce, on the composition of peat. Peat is plant matter in the process of decay and ulmification. It is interesting to find how well chlorophyll withstands these processes; it is found even at the bottom of the peat bog in larger proportions than at the top.

IMPORTS OF AMMONIUM CHLORIDE into the Argentine during the first nine months of 1928 amounted to 727,256 kilos., nearly 156,000 kilos. more than the imports of the entire previous year. This large increase cannot be accounted for, since the use of the substance as a fertiliser has not begun and no special expansion is known to have taken place among the usual consumers, such as the dry cell, galvanising and soldering industries. Germany and Great Britain are the principal sources of this commodity.

THE INSTITUTE OF BREWING has just issued a pamphlet (pp. 18) giving an account of the work in progress under its research scheme. The work includes various investigations of chemical interest, reports of which have been published in the *Journal* of the Institute—*e.g.*, "Some Suggested Modifications of the Gravimetric Method for the Evaluation of Hops," by J. J. H. Hastings and Dr. T. K. Walker; "The Influence of Special Methods of Drying at Low Temperatures upon the Antiseptic Properties of Hops," by the same authors; "The Effect of Hydrogen-Ions in Brewing Processes," by G. Hagues, etc.

MR. ALAN D. MACLEAN, B.Sc., A.M.I.Mech.E., A.M.I.E.E., has resigned his position as chief assistant engineer of the Yorkshire Electric Power Co., in order to take up the position of general sales manager to International Combustion, Ltd., of Africa House, Kingsway, London, W.C. Mr. Maclean has had a long and extensive career in the field of electrical research and development, and has served previously such well-known concerns as Siemens Bros., Tennant and Barrs, Agwi Petroleum Corporation, Ltd., etc., and practised privately as consulting engineer prior to joining the staff of the Yorkshire Electric Power Co.

AT THE ROYAL SANITARY INSTITUTE Public Health Exhibition in the Cutler's Hall, Sheffield, July 15 to 20, Imperial Chemical Industries, Ltd., will be represented on Stand No. 34 in the large banqueting hall. This stand will be wholly devoted to a display of "Chloros," the chlorine disinfectant, which has made considerable progress during the past few years. Amongst the more important uses of "Chloros" are the sterilisation of water supplies, the disinfection of swimming baths, schools, hospitals and other public buildings, and also street cleaning and the treatment of sewage effluents. It is also finding increasing use for domestic purposes in the home, office or shop.

AMMONIUM CHLORIDE is manufactured by the Ruhr Chemie A.G., at Essen, by reaction between ammonia, carbon dioxide, and calcium chloride.

MR. CHARLES SHOTTON has been appointed chemist to the Magadi Soda Co. Mr. Shotton will spend six months at the works of Imperial Chemical Industries at Winnington, Cheshire, and will then proceed to Magadi, Kenya Colony.

A FIRE broke out at the Tannoch Chemical Works of Shand Brothers, at Luggiebank, South Cumbernauld, on Saturday, July 6. Considerable damage was done. The works is engaged in the manufacture of chemicals used at print works.

A WOOD CHEMICAL INSTITUTE has been founded in Buffalo by representatives of the United States wood distillation industry, for the promotion of their common interests. The president is W. L. Hein, and the secretary L. T. Kniskern, Room 859, 231 South La Salle Street, Chicago.

THE BELGIAN CHEMICAL INDUSTRY was prosperous during 1928, and production increased materially. Sulphuric acid remained the principal industrial chemical product exported in 1928, shipments totalling 227,825 tons, as compared with 186,923 tons in 1927. Exports of copper sulphate rose from 12,049 tons in 1927 to 15,851 tons in 1928.

TOTAL GERMAN BENZOL IMPORTS increased from 28,935 metric tons in January-March, 1928, to 31,945 metric tons in the first 1929 quarter. This consumption of foreign benzol is the result of increasing use in motors, Germany being unable to meet the local demand for mixtures for internal combustion engines, despite its present annual benzol production of over 360,000 tons.

THE LEAD CONSUMED in the United States in May, according to American Bureau of Metal Statistics, was as follows (April figures in brackets):—In the cable industry, 16,240 tons (19,385 tons); in the lead accumulator industry, 5,419 tons (7,314 tons); for the production of lead foil, 2,260 tons (3,346 tons); in the munitions industry, 1,925 tons (2,096 tons); and for other purposes, 36,089 tons (34,811 tons).

ZINC PRODUCERS (English, German, Canadian, French, Belgian and Mexican) met at Ostend on Tuesday. In view of the increase in the stocks of zinc due to the establishment of new factories, it was decided to reduce production until the end of the year by 10 per cent., as against the 5 per cent. reduction hitherto in operation. The monthly reduction will therefore amount to 6,000 tons. Another meeting will be held in November, when the tax on production for 1930 will be discussed.

UNIVERSITY NEWS.—*Aberdeen:* The degree of D.Sc. has been conferred on Mr. A. N. Campbell.—*London:* The degree of Ph.D. in metallurgy has been conferred on Mr. F. E. Ball, for a thesis entitled "The Oxidation of Arsenical Copper," embodying the results of research work into the causes of wastage of copper locomotive fire-box stays, carried out in the chemical laboratory of the London Midland and Scottish Railway at Derby, on behalf of the British Non-Ferrous Metals Research Association.

A NEW BUILDING MATERIAL, lighter than water, has been produced by a Washington engineer, William P. Kerth. It weighs less than 500 kg. per cubic metre, as compared with the 2,500–3,000 kg. of the usual materials. It is claimed that the new material will allow the height of buildings to be doubled, and that it combines great strength with resistance to weathering. The basic material is loam, which is treated in various drying ovens and then subjected to a form of fermentation. It can be pressed. It is suggested that complete house-fronts, roofs, etc., can be manufactured from it for immediate sale.

ANCONA SULPHUR, LTD., this week published a statement in accordance with the regulations of the committee of the Stock Exchange. According to this statement, the company has an authorised capital of £100,000, divided into 400,000 shares of 5s. each, all issued. The directors are Mr. B. G. Lloyd, Mr. J. W. Bell, Mr. W. A. C. Martin, and Mr. Bernard Stutfield (a director of Price Stutfield and Co., Ltd.). The objects of the company (which was incorporated on June 28) are to work and develop the sulphur ore deposits at the St. Stefano Sulphur Mine, Italy, through a subsidiary Italian company; to establish a sulphur refining works in this country; and to acquire a process for extracting sulphur from its ores. The company's mineral agents, Price Stutfield and Co., Ltd., have entered into a contract with the company guaranteeing the sale of the output of sulphur up to 30,000 tons per annum until the end of 1930, and 50,000 tons per annum afterwards for a period of five years from the date of the company's incorporation.

Obituary

DR. WILLY JERWITZ, chief of the South African office of the German Potash Syndicate at Capetown, on April 23, aged 52, while on leave in Germany.

MR. CHARLES B. TOLLER, managing director of Thomas Bolton and Sons, Ltd., of Widnes, on Tuesday, July 2. He was found with a bullet wound in his temple, a revolver being in his right hand. At the inquest, held the same day, a verdict of "Suicide while not of sound mind" was returned.

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Studies in nitrations. II. The nitration of the anilides. F. Arnall and T. Lewis. *J.S.C.I.*, June 28, pp. 159–160T.

United States

GENERAL.—The chemical effects of high-frequency sound waves. II. A study of emulsifying action. W. T. Richards. *J. Amer. Chem. Soc.*, June, op. 1724–1729.

Equilibrium between the carbonates and bicarbonates of sodium and potassium in aqueous solution at 25° C. A. E. Hill and S. B. Smith. *J. Amer. Chem. Soc.*, June, pp. 1626–1636.

Calculating the specific heats of hydrocarbon vapours. W. K. Lewis and W. H. McAdams. *Chem. & Met. Eng.*, June, p. 336.

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RUBBER.—Some observations on rubbers with low nitrogen content. A. D. Cummings and L. B. Sebrell. *Ind. Eng. Chem.*, June 1, pp. 553–557. Rubber has been prepared protein-free, although not entirely nitrogen-free, by digesting latex with caustic soda, as recommended by Pummerer and Pahl. Rubbers with a nitrogen content of from 0·004–0·0096 per cent. have been prepared. This rubber can be compounded and cured to give good quality vulcanisates, which compare very favourably with the controls. Protein-free rubber, when acetone-extracted, becomes nitrogen-free. This can still be vulcanised, although it cures slowly.

German

ANALYSIS.—The distinction between hide-glue and bone-glue by precipitation with sulphosalicylic acid, and the applicability of the " sulphosalicylic acid test " for determining the quality of gluten preparations. O. Gerngrosz and H. Maier-Bode. *Kolloid-Zeitschrift*, June, pp. 184–191.

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GENERAL.—Salt glazes. F. Singer. *Chemische Fabrik*, June 26, p. 309.

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PLANT.—A recent plant for the artificial drying of chemical products. K. Rengew. *Chemiker-Zeitung*, June 26, pp. 496–497.

RAYON.—Researches on rayon. I. The determination of the tensile strength of rayon. W. Weltzien. *Melliand Textilberichte*, June, pp. 453–457.

Miscellaneous

ANALYSIS.—The detection of carbon tetrachloride in chloroform. J. Sivadjian. *Journal Pharmacie et Chimie*, May 1, pp. 434–437 (in French).

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A fluorescence method for the differentiation and evaluation of rhubarbs. Mahen. *Annales Chimie Analytique*, June 15, pp. 156–168 (in French).

GENERAL.—The velocities of esterification of fatty acids with hydrochloric acid in ethylene glycol. A. Kailan and A. Schachner. *Monatshefte*, vol. 52, part 1, pp. 23–52 (in German).

ORGANIC.—Cymene, a by-product of the manufacture of sulphite-cellulose. M. E. Bœdtker. *Journal Pharmacie et Chimie*, May 1, pp. 417–434 (in French).

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

312,949. Artificial Rubber, Manufacture and Production of. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, January 2, 1928.

In the polymerisation of diolefines it has been found that the polymerisation period is reduced and the products improved by treating with aqueous solutions or emulsions such as milk, solutions of glue, gelatine, etc., which contain albuminous substances. This mixture separates into two layers, the upper of which is a creamy or gelatinous mass containing at least 75 per cent. of diolefines, in which water is dispersed in the hydrocarbon instead of the hydrocarbon in water. This layer can be polymerised in a few days instead of the usual period of a few weeks. In addition to albuminous substances, other substances having a higher polymerising action can be used, *e.g.* oxygen, hydrogen peroxide, benzoyl superoxide, ammonium persulphate, and barium peroxide. Substance which modify the surface tension of emulsions may also be added, such as alcohols, ketones, salts of aromatic or aliphatic sulphonic acids. Examples are given of the production of artificial rubber by this process.

312,975. Barium Compounds, Manufacture of. S. Wittouck, 6, Rue d'Argenson, Paris. Application date, March 3, 1928.

The process is for the manufacture of dibarium silicate and other silicates rich in barium, or compounds of barium silicate with barium oxide. The necessity of calcining barium compounds, such as barium carbonate, which do not melt, is avoided by mixing the starting materials with a medium infusible at the desired calcination temperature. The introduction of foreign matter is avoided by employing the reaction product as the infusible addition. In an example of the manufacture of dibarium silicate, a mixture of silica and barium sulphate with a larger quantity of dibarium silicate is calcined at 1500° C., without fusion of the mass. The product is almost entirely dibarium silicate, while sulphuric acid sulphur dioxide and oxygen are obtained as by-products. Tri-barium silicate and intermediate compounds are obtained in a similar manner.

313,061. Aldehydes and Alcohols, Manufacture of. G. T. Morgan and R. Taylor, Chemical Research Laboratory, Teddington, Middlesex. Application date, February 28, 1928.

Carbon monoxide and hydrogen are caused to react at high temperature and pressure by the use of a catalyst consisting of cobalt added to mixtures of zinc and chromium oxides, zinc and manganese oxides, or zinc, chromium and manganese oxides, the cobalt being in a form reducible as a preliminary operation or during the reaction. The condensation produces the homologous series of aliphatic aldehydes

$$C_nH_{2n+1}CHO$$

and the corresponding primary alcohols. The reaction is conducted in a copper-lined vessel, to enable the temperature to be reduced or the rate of combination increased. The products contain a higher proportion of ethyl alcohol (30 per cent.) than those obtained by other processes. The aldehydes are separated by the use of reagents such as sodium bisulphite, alcoholic ammonia, semi-carbazide, or phenyl-hydrazine and its nitroderivatives. Several examples are given.

313,067. Polymerisation of Olefines, Process for. F. Hofmann, 15, Novastrasse, Breslau, M. Otto, 33, Auenstrasse, Breslau; and W. Stegemann, 79, Kaiserstrasse, Breslau, Germany. Application date, March 5, 1928.

Specification No. 293,487 (see The Chemical Age, Vol. XIX, p. 125) describes the polymerisation of butylene, ethylene, and propylene by treating with boron trifluoride. In this invention, the reaction is accelerated by the addition of water, hydrochloric acid, hydrobromic acid, hydriodic acid or hydrofluoric acid to the boron fluoride. The same effect is obtained by adding halogen hydrocarbons of the aliphatic, aromatic, or alicyclic series which split off their halogen in the Friedel Craft reaction. Examples are given of the production of oils from ethylene, propylene, and cyclohexane.

313,188. Rubber, Producton of. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application dates, February 9 and July 6, 1928.

Plastic or elastic products are obtained by the polymerisation of diolefines, such as butadiene or its homologues, in the presence of latex or similar vegetable saps, and in the presence of oxidising or emulsifying agents such as oxygen, hydrogen peroxide, barium peroxide, sodium peroxide, benzoyl peroxide, ammonium or sodium salts of perbenzoic acid, persulphates, perborates or perchlorates of sodium or ammonium, manganese dioxide, etc. Suitable emulsifying agents include soaps, oleates, stearates, or other salts of higher fatty acids, saponified products obtained by the oxidation of paraffin wax, sulphite cellulose liquor, sulphonated mineral oils, aliphatic, aromatic, or hydroaromatic sulphonic acids, which may also be polycyclic and which are preferably alkylated, such as toluene-sulphonic acid, isopropyl-naphthalene-sulphonic acid, butylated naphthalene-sulphonic acid and their sodium salts. The latex added may be of rubber or guttapercha in the proportion of 10–25 per cent. Examples are given.

313,207. Chlorinated Compounds of the Benzene Series, Manufacture of. A. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, March 9, 1928.

These compounds are obtained by treating 1 : 3-dimethylbenzene-4-sulphonic acid in a mineral acid solution with a chlorinating agent. The mono-, di-, and tri-chloro-1 : 3-dimethyl-benzene-4-sulphonic acids are obtained according to the amount of chlorine employed. These may be hydrolysed by heating with sulphuric or phosphoric acid, so that the sulphonic acid group is split off and the corresponding chlorinated benzene derivatives are obtained. Gaseous chlorine, or a chlorate in dilute hydrochloric acid solution, or a hypochlorite in aqueous solution, may be employed, and the process may be accelerated by the addition of a catalyst such as iodine. The higher chlorinated products may be prepared by employing a lower chlorinated product as starting material.

313,316. Esters from Acid Amides, Production of. H. G. Smith, Norton Hall, The Green, Norton-on-Tees, Durham, and Imperial Chemical Industries, Ltd., Imperial Chemical House, Millbank, London, S.W.1. Application date, June 12, 1928.

Esters of organic acids, particularly higher esters such as butyl formate, are obtained by the reaction between organic acid amides and alcohols in the presence of strong sulphuric acid. Thus, an equimolecular proportion of an acid amide such as formamide or acetamide is mixed with the alcohol, and strong sulphuric acid is added in slight excess of that necessary to fix the ammonia formed. When the ester boils at a lower temperature than the alcohol, a reflux condenser may be used to return the alcohol and allow the ester vapour to pass.

313,352. Anhydrous Sodium Acetate, Production of. Courtaulds, Ltd., 16, St. Martin's-le-Grand, London, F. Adcock, 75, Beresford Avenue, Coventry, N. G. Baguley, 22, Stanway Road, Coventry, and D. L. Wilson, 41, Spencer Avenue, Coventry. Application date, July 23, 1928.

Anhydrous acetic acid is converted directly into sodium acetate in the absence of water by treating with sodium, preferably in the form of sodium amalgam. This may be prepared by electrolysis of sodium chloride with a mercury cathode, and the amalgam is then passed into contact with the

anhydrous acetic acid. The mercury is then returned to the electrolytic cell, so that the process is continuous. The temperature is preferably 30°–60° C. so that the anhydrous sodium acetate dissolves in the acetic acid and may be obtained by subsequent cooling.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE, when they became open to inspection under the International Convention :—285,017 (Selden Co.), relating to phthalic anhydride, see Vol. XVIII, p. 347 ; 285,382 (I.G. Farbenindustrie Akt.-Ges.), relating to indophenols, see Vol. XVIII, p. 368 ; 286,272 (I.G. Farbenindustrie Akt.-Ges.), relating to synthetic rubber, see Vol. XVIII, p. 440 ; 286,622 (Ges. für Linde's Eismaschinen Akt.-Ges.), relating to purification of gas mixtures, see Vol. XVIII, p. 440 ; 286,669 (I.G. Farbenindustrie Akt.-Ges.), relating to vat dyestuffs of the anthanthrone series, see Vol. XVIII, p. 463 ; 286,717 (I.G. Farbenindustrie Akt.-Ges.), relating to substantive azo dyestuffs, see Vol. XVIII, p. 463 ; 295,257 (Soc. of Chemical Industry in Basle), relating to aminoanthraquinone derivatives, see Vol. XIX, p. 347 ; 296,423 (I.G. Farbenindustrie Akt.-Ges.), relating to organic bases, see Vol. XIX, p. 441 ; 300,167 (I.G. Farbenindustrie Akt.-Ges.), relating to synthetic rubber, see Vol. XX, p. 53 ; 306,883 (Selden Co.), relating to catalytic organic compounds, see Vol. XX, p. 432 ; 306,935 (I.G. Farbenindustrie Akt.-Ges.), relating to fused caustic alkalies, see Vol. XX, p. 454.

International Specifications not yet Accepted

311,225. METALLIC OXIDES. Metallges. Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, May 7, 1928.

Zinc, lead, and antimony oxides are obtained by briquetting the charge with coke free from tarry matter, and with a binding agent such as sulphite cellulose lye, lime, gypsum, alumina or cement, and heating.

311,226. POTASH SALTS. Chemieverfahren-Ges., 15, Wilhelmstrasse, Bochum, Germany. International Convention date, May 7, 1928.

Sylvinite containing kieserite is heated with liquor free from ammonia to hydrate the kieserite. The solution is cooled and treated with ammonia to precipitate potassium and sodium sulphates, and the sodium sulphate is dissolved out in cold water. The liquor is treated with carbon dioxide to precipitate magnesium ammonium carbonate which may be heated to recover magnesium carbonate or magnesia, carbon dioxide, and ammonia. The liquor is cooled to separate ammonium chloride, and treated with carbon dioxide to obtain sodium bicarbonate. The residual liquor is heated to obtain ammonia and carbon dioxide for use again.

311,271. MANGANESE DIOXIDE. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, May 8, 1928.

Manganese carbonate or bicarbonate is heated to 250°–600° C., with excess oxygen under a higher partial pressure than that of the oxygen in air at atmospheric pressure. Atmospheric or higher pressure may be used. The reaction may be effected in a heated tube, with a current of gas, or a pressure vessel may be used. Manganese dioxide containing 90–100 per cent. MnO_2 is obtained.

311,336. DYE INTERMEDIATES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, May 9, 1928.

A solution of an *o*-aminocarboxylic acid which is acid to Congo Red is treated with phosgene to obtain isatoic acid, anhydride, homologues, and derivatives. Hydrochlorides of the amines may be used and the phosgene passed through the solution at ordinary temperature. Examples are given.

311,347. DYES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, May 9, 1928. Addition to 286,669.

The condensation products described in specification 286,669 (see THE CHEMICAL AGE, Vol. xviii, p. 463), which contain free amino groups, are treated with acylating agents. Examples are given.

311,369. TREATING ZINC ORES. Zaklady Hohenlohego-Hohenlohe-werke Spolka Akcyjna, Welnowiec, Gorny Slask, Poland. International Convention date, May 10, 1928.

Roasted zinc ores or mixed zinc and lead oxides are heated with sulphuric acid at 400° C., and then leached to obtan zinc sulphate solution and lead sulphate residue.

311,372. INDIARUBBER. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, May 10, 1928.

Rubber is vulcanised by incorporating selenium or selenium compounds in a colloidal state into natural or artificial rubber. Dissolved selenium compounds may be added to rubber latex, and selenium in dispersed form precipitated by adding acetic, formic, or sulphurous acid, or formaldehyde. The rubber is simultaneously coagulated. Examples are given.

311,376. SYNTHETIC AMMONIA. E. Urbain, 6, Rue Lyautey, Paris. International Convention date, May 10, 1928.

A mixture of nitrogen and steam is passed over ferrophosphorus at 600°–900° C., forming iron oxide, hydrogen, phosphoric acid, and ammonia, which combines with the phosphoric acid. Ferrophosphorus is obtained by heating a mixture of calcium phosphate, ferruginous bauxite, silica, and carbon. It may be separated magnetcally.

311,384–5. DYES. Soc. of Chemical Industry in Basle, Switzerland. International Convention date, May 10, 1928.

311,384. Azo dyes are obtained by the condensation of two molecular parts of aminoazo or aminopolyazo dyestuffs with one molecular part of dinitrostilbene disulphonic acid or dinitro-dibenzyl disulphonic acid or the conversion products of *p*-nitro-toluene-*o*-sulphonic acid. The products may be treated with oxidising agents, or their complex metal compound may be formed.

311,385. The complex chromium compounds obtained as described in specification 301,772, are treated with agents yielding metals other than chromium, such as copper, cobalt, nickel, tungsten, uranium, aluminium, tin, titanium, or molybdenum, to obtain dyestuffs having greater fastness.

311,400. DYES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, May 11, 1928.

Azo dyes are obtained by coupling 2:3-oxynaphthoic acid-2^1-methyl-5^1-isopropyl-1^1-anilide with a diazo compound of dianisidine, 4-aminodiphenylamine and its derivatives, and an aminoazo compound obtained from any diazo compound and α-naphthylamine or an amino hydroquinone dialkylether.

LATEST NOTIFICATIONS

314,518. Process for the manufacture of O-*o*-diacetyl-diphenolisatine. Hoffman-La Roche and Co. Akt.-Ges., F. June 29, 1928.

314,526. Production of zirconium oxides and the like oxides. Karl, A. June 30, 1928.

314,527. Manufacture of vat-dyestuffs of the di-thionaphthenyl-enequinone series. I.G. Farbenindustrie Akt.-Ges. June 29, 1928.

314,398. Manufacture of adsorbent silica and like gels. Silica Gel Corporation. March 12, 1927.

314,440. Process for the production of condensation products from glycerine chlorhydrins. Rohm and Haas Akt.-Ges. June 27, 1928.

314,443. Synthesis of urea. Lamb, A. B. June 27, 1928.

314,448. Process of preparing α-para-hydroxy-phenyl-β-methyl-aminopropanol. I.G. Farbenindustrie Akt.-Ges. June 27, 1928.

314,542. Process for the manufacture of tri-substituted thioureas. I.G. Farbenindustrie Akt.-Ges. June 30, 1928.

Specifications Accepted with Date of Application

287,464. Suspensions and emulsions, Manufacture of. I.G. Farbenindustrie Akt.-Ges. March 18, 1927.

285,502. Nitrogenous dyestuffs, Manufacture of. I.G. Farbenindustrie Akt.-Ges. February 18, 1927.

287,479. Azo dyestuffs, Manufacture of. I.G. Farbenindustrie Akt.-Ges. March 21, 1927.

287,525 and 313,937. Distillation and cracking of hydrocarbons, particularly mineral oils and tars. H. Magnus. March 23, 1927. 313,937, addition to 287,525.

(*Continued on page* 35)

(*Continued from page* 34)

288,268. Rubber latex, Method of Preserving. Naugatuck Chemical Co. April 8, 1927.
290,192. Condensation products from urea, thiourea, or their derivatives and an alcohol or a ketone, Manufacture of. I.G. Farbenindustrie Akt.-Ges. March 22, 1928. Addition to 278,390 and 287,095.
294,100. Liquid polymerisation product from gases containing hydrocarbons, Production of. C. Epner. July 16, 1927.
297,839. Salts of halogen substituted aliphatic tetra-ammonium bases, Production of. E. Glucksmann. September 29, 1927.
300,248. Metallic alloy. Barber Asphalt Co. November 10, 1927.
313,864. Acetaldehyde from acetylene, Production of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*). March 12, 1928.
313,865. Azo-dyestuffs, Manufacture of. O. Y. Imray. (*I.G. Farbenindustrie Akt.-Ges.*). March 12, 1928.
313,897. Acetone, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*). March 16, 1928.
313,892. Acidyl derivatives of hydroxy-alkyl-ethers of polyhydric alcohols, Production of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*). December 19, 1927.
313,934. Organic bases, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*). January 4, 1928.
313,999. Finely divided ferric oxide, Manufacture of. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*). March 21, 1928. Addition to 298,926.
314,132. Aliphatic anhydrides, Manufacture of. H. Dreyfus. March 27, 1928.
314,163. Carbon, Production of. T. Ewan and Imperial Chemical Industries, Ltd. April 19, 1928.
314,213. Destructive hydrogenation of solid carbonaceous material, Process for. A. Rule and Imperial Chemical Industries, Ltd. June 22, 1928.
314,219. Iron and steel, Treatment of. R. Esnault-Pelterie. June 26, 1928.
314,242. Magnesium cyanide and its double compound with ammonia, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*). July 23, 1928. Addition to 300,348.
314,129. Gases containing carbon monoxide, Method of operating with at elevated temperatures. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*). December 30, 1927.

Applications for Patents

Brightman, R., and Imperial Chemical Industries, Ltd. Azo dyes. 20,460. July 3.
British Research Association for the Woollen and Worsted Industries and King, A. T. Production of aromatic amino derivatives. 20,812, 20,813. July 6.
—— Bleaching etc. dyes from textile fibres, etc. 20,814. July 6.
Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Vulcanisation of artificial rubber-like masses. 20,290. July 2.
——Esterification of mercerised cellulose. 20,479. July 3.
Collis, W. A. Low-temperature distillation of carbonaceous materials. 20,500. July 4.
Compagnie de Produits Chimiques et Electrométallurgiques Alais, Froges, et Camargue. Preparation of substituted cyclohexylamines. 20,275. July 2. (France, July 3, 1928.)
Dorr Co., Ltd., Venn, R. J., and Stewart, R. F. Recovery of β-naphthol etc. organic compounds. 20,161. July 1.
Du Pont de Nemours and Co., E. I. and Triggs, W. W. Synthetic resin. 20,114. July 1.
Ellis, G. B., and Chemical Works, formerly Sandoz. Manufacture of dyestuffs. 20,854. July 6.
Fairweather, D. A. W., Scottish Dyes, Ltd., and Thomas, J. Production of chemical substances. 20,191. July 1.
Faust, O., and Zellstofffabrik Waldof. Manufacture of sodium sulphite etc. 20,674. July 5. (Germany, August 9, 1928).
—— Manufacture of bleach liquor. 20,675. July 5. (Germany, August 9, 1928).
Ges. für Teerverwertung. Purifying naphthalene. 20,099. July 1.
Guillissen, J. und Union Chimique Belge Soc. Anon. Manufacture of earthy-alkaline cyanamides. 20,758. July 5.
Hepworth, H. Manufacture of acetic anhydride. 20,502. July 4.
Hirsch Kupfer-und Messingwerke Akt.-Ges. Performing chemical synthesis. 20,537. July 4. (Germany, July 6, 1928.)
I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Production of metal carbamates etc. 20,144. July 1.
—— Production of calcium cyanamide. 20,145. July 1.
—— Production of fertiliser salts. 20,146. July 1.
—— Recovery of products from montan wax. 20,147. July 1.
—— Electrolysis of fuzed halogen salts. 20,148. July 1.
—— Production of magnetic cores. 20,418, 20,419. July 3. (July 14, 1928.)
—— Production of aluminium. 20,558. July 4.
—— Production of aldehydes. 20,559. July 4.
—— Production of esters. 20,560. July 4.
—— Production of metal carbonates etc. 20,561. July 4.
—— Production of sols etc. 20,562. July 4.
—— Production of urea. 20,563. July 4.
—— Conversion of organic liquids into solids. 20,564. July 4.
—— Production of vat dyestuffs. 20,565. July 4.
—— Separation of impurities from oil etc. 20,688. July 5.
—— Production of vat dyestuffs. 20,689. July 5.
—— Production of dyestuffs. 20,816. July 6.
I.G. Farbeninsdutrie Akt.-Ges. Artificial resins. 20,151. July 1. (Germany, July 19, 1928.)
—— Process of polymerizing hydrocarbons. 20,153. July 1. (Germany, July 12, 1928.)
—— Manufacture of synthetic resins. 20,172. July 1. (Germany, July 2, 1928.)
—— Purification of waste alkali liquors. 20,179. July 1. (Germany, July 2, 1928.)
—— Manufacture of condensation products of anthraquinone-acridone series. 20,482. July 3. (Germany, July 4, 1928.)
—— Printing with vat dyestuffs. 20,571. July 4. (Germany, July 4, 1928.)
—— Film-feeding devices for kinematograph apparatus. 20,569. July 4. (Germany, July 10, 1928.)
—— Motion-picture apparatus. 20,570. July 4. (Germany, July 12, 1928.)
—— Manufacture of condensation products from diolefines etc. 20,700. July 5. (Germany, July 11, 1928.)
—— Manufacture of coloured varnish coatings on glass articles. 20,701. July 5. (Germany, July 11, 1928.)
—— Printing with vat dyestuffs. 20,702. July 5.
Imperial Chemical Industries, Ltd. Barrels, drums, etc. 20,332. July 3.
—— Manufacture of modified glyptal resins. 20,459. July 3.
—— Coating etc. material. 20,465. July 3.
—— and Leicester, F. D. Manufacture of acetic anhydride. 20,502. July 4.
Kane, T. Manufacture of hydrogen iodide etc. 20,362. July 3.
—— Removing unsaturated hydrocarbons from gaseous mixtures etc. 20,363, 20,364. July 3.
—— Process for utilization of unsaturated hydrocarbons. 20,365, 20,366. July 3.
—— Manufacture of iodine. 20,367. July 3.
Meissner, J., and Schmid, A. Separation of nitroglycerine and residuary acid. 20,748. July 5.
Pick, P. Manufacture of vessels etc. proof against chemical influences. 20,597. July 4. (Germany, July 23, 1928.)
Scottish Dyes, Ltd., Shaw, C., Thomas, J., and Thomson, R. F. Production of dyestuffs, etc. 20,159. July 1.
Soc. of Chemical Industry in Basle. Manufacture of dyestuffs. 20,568. July 4. (Switzerland, July 4, 1928.)
Spilker, A. and G. Purifying naphthalene. 20,099. July 1.
Union Chimique Belge Soc. Anon. Separation of sodium salt of paraoxyphenyl-arsenic acid. 20,756. July 5. (Belgium, June 7.)
—— Ioduration of oxy-quinoline-sulphonic acid. 20,757. July 5. (Belgium, June 7.)
Woodall-Duckham (1920), Ltd. Apparatus for separating solids from liquids. 20,567. July 4.

New Benn Books

WORKS announced for early publication by Ernest Benn, Ltd., include the following :—

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The Chimney Murder. By E. M. Channon. (7s. 6d.) A murder mystery.

Lettering. With an Introduction by Hermann Degering. (50s.) A series of 240 collotype plates illustrating modes of writing in Western Europe from antiquity to the end of the eighteenth century.

Industrial Furnace Technique. By A. Hermansen. (25s.) Translated from the Swedish. The principles that govern the design and construction of furnaces are set forth for the first time.

The Short Stories of H. G. Wells. (7s. 6d.) Sixth impression.

Study to Be Quiet. Compiled by B. L. Edwards. (6s.) A Nature anthology. Reprint.

Children, Can You Answer This? By George A. Birmingham. (3s. 6d.) Reprint.

By Request. By Ethel M. Dell. (3s. 6d.) Reprint.

Poems. By Walter de la Mare. (6d.) Reprint.

The Greene Murder Case. By S. S. Van Dine. (7s. 6d.) Reprint.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £30 per ton; powder, £32 per ton; extra fine powder, £34 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength and locality.

ACID NITRIC, 80° TW.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.

BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2 cwt. bags carriage paid any station in Great Britain.)

CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 3d. to 1s. 8d. per gall. pyridinised industrial, 1s. 5d. to 1s. 10d. per gall.; mineralised 2s. 4d. to 2s. 8d. per gall.; 64 O.P., 1d. extra in all cases.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3¾d. per lb., ex-wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.b. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—6½d. to 6¾d. per lb. Crude 60's, 2s. 2d. per gall.

ACID CRESYLIC 99/100.—2s. 2d. to 2s. 8d. per gall. 97/99.—2s. 1d. to 2s. 2d. per gall. Pale, 95%, 1s. 9d. to 1s. 10d. per gall. Dark, 1s. 6d. to 1s. 7d.

ANTHRACENE.—A quality, 2d. to 2½d. per unit. 40%, £4 10s. per ton.

ANTHRACENE OIL, STRAINED, 1080/1090.—4¾d. to 5¼d. per gall. 1100, 5¼d. to 6d. per gall.; 1110, 6d. to 6½d. per gall. Unstrained, 6¾d. to 7d. per gall.

BENZOLE.—Prices at works: Crude, 10d. to 11d. per gall.; Standard Motor, 1s. 5d. to 1s. 6d. per gall.; 90%, 1s. 7d. to 1s. 8d. per gall; Pure, 1s. 10d. to 1s. 11d. per gall.

TOLUOLE.—90%, 1s. 7½d. to 2s. per gall. Firm. Pure, 2s. to 2s. 2d. per gall.

XYLOL.—1s. 5d. to 1s. 10d. per gall. Pure, 1s. 8d. to 2s. 1d. per gall.

CREOSOTE.—Cresylic, 20/24%, 6¾d. to 7d. per gall.; Heavy, 6¼d. to 6¾d. per gall. Middle oil, 4½d. to 5d. per gall. Standard specification, 3d. to 4d. per gall. Light gravity, 2d. to 2¼d. per gall. ex works. Salty, 7½d. per gall.

NAPHTHA.—Crude, 8d¼. to 8¾d. per gall. Solvent, 90/160, 1s. 3d. to 1s. 3½d. per gall. Solvent, 95/160, 1s. 4d. to 1s. 5d. per gall. Solvent 90/190, 1s. to 1s. 3d. per gall.

NAPHTHALENE, CRUDE.—Drained Creosote Salts, £4 10s. to £5 per ton. Whizzed, £5 per ton. Hot pressed, £8 10s. per ton.

NAPHTHALENE.—Crystals, £12 5s. to £14 10s. per ton. Quiet Flaked, £14 to £15 per ton, according to districts.

PITCH.—Medium soft, 40s. to 45s. per ton, f.o.b., according to district. Nominal.

PYRIDINE.—90/140, 3s. 9d. to 4s. per gall. 90/160, 3s. 6d. to 3s. 9d. per gall. 90/180, 1s. 9d. to 2s. 3d. per gall. Heavy, prices only nominal.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100%.

ACID BENZOIC.—1s. 8½d. per lb.

ACID GAMMA.—4s. 6d. per lb.

ACID H.—3s. per lb.

ACID NAPHTHIONIC.—1s. 6d. per lb.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb.

ACID SULPHANILIC.—8½d. per lb.

ANILINE OIL.—8d. per lb. naked at works.

ANILINE SALTS.—8d. per lb. naked at works.

BENZALDEHYDE.—2s. 3d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZOIC ACID.—1s. 8½d. per lb.

o-CRESOL 29/31° C.—5¼d. per lb.

m-CRESOL 98/100%.—2s. 3d. to 2s. 6d. per lb.

p-CRESOL 32/34° C.—2s. 3d. to 2s. 6d. per lb.

DICHLORANILINE.—1s. 10d. per lb.

DIMETHYLANILINE.—1s. 11d. per lb.

DINITROBENZENE.—8d. per lb. naked at works. £75 per ton.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 7½d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

DIPHENYLAMINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—10d. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb.

B-NAPHTHYLAMINE.—3s. per lb.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. per lb. d/d.

p-NITRANILINE.—1s. 8d. per lb.

NITROBENZENE.—6d. per lb. naked at works.

NITRONAPHTHALENE.—1s. 3d. per lb.

R. SALT.—2s. 2d. per lb.

SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.

o-TOLUIDINE.—8d. per lb.

p-TOLUIDINE.—1s. 9d. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 6d. per lb. 100%.

N. W. ACID.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £9 15s. to £10 5s. per ton. Grey, £16 10s. to £17 10s. per ton. Liquor, 9d. per gall.

ACETONE.—£78 per ton.

CHARCOAL.—£6 to £8 10s. per ton, according to grade and locality.

IRON LIQUOR.—1s. 3d. per gall, 32° Tw. 1s. per gall. 24° Tw.

RED LIQUOR.—9d. to 10½d. per gall. 16° Tw.

WOOD CRESOTE.—1s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 8d. to 3s. 11d. per gall. Solvent, 4s. to 4s. 3d. per gall.

WOOD TAR.—£3 10s. to £4 10s. per ton.

BROWN SUGAR OF LEAD.—£38 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 3d. per lb. according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—1s. 10d. to 2s. per lb.

BARYTES.—£5 10s. to £7 per ton, according to quality.

CADMIUM SULPHIDE.—5s. to 6s. per lb.

CARBON BISULPHIDE.—£25 to £27 10s. per ton, according to quantity

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£40 to £50 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—4⅝d. to 5¼d. per lb.

LAMP BLACK.—£30 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPONE, 30%.—£20 to £22 per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton, f.o.r. London.

SULPHUR.—£10 to £13 per ton, according to quality.

SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra

SULPHUR PRECIP. B. P.—£55 to £60 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb., carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—6s. 6d. to 6s. 9d. per lb.

ZINC SULPHIDE.—8d. to 11d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 6d. to 2s 8d. per lb.

ACID, BENZOIC, B.P.—2s. to 3s. 3d. per lb., according to quantity Solely ex Gum, 1s. 3d. to 1s. 4d. per oz., according to quantity

ACID, BORIC B.P.—Crystal, 36s. to 39s. per cwt.; powder, 40s. to 43s. per cwt.; extra fine powder, 42s. per cwt., according to quantity. Carraige paid any station in Great Britain, in ton lots.
ACID, CAMPHORIC.—19s. to 21s. per lb.
ACID, CITRIC.—2s. 1d. to 2s. 3d. per lb., less 5%.
ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.
ACID, MOLYBDIC.—5s. 3d. per lb. in ½ cwt. lots. Packages extra. Special prices for quantities and contracts.
ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d.
ACID, SALICYLIC, B.P. PULV.—1s. 5d. to 1s. 7d. per lb. Technical.—10½d. to 11½d. per lb.
ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.
ACID, TARTARIC.—1s. 4½d. per lb., less 5%.
ACETANILIDE.—1s. 5d. to 1s. 8d. per lb. for quantities.
AMIDOL.—7s. 6d. to 9s. per lb., d/d.
AMIDOPYRIN.—7s. 9d. to 8s. per lb.
AMMONIUM BENZOATE.—3s. 3d. to 3s. 9d. per lb., according to quantity. 18s. per lb. ex Gum.
AMMONIUM CARBONATE B.P.—£36 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated, 1s. per lb.
AMMONIUM MOLYBDATE.—4s. 9d. per lb. in ½ cwt. lots. Packages extra. Special prices for quantities and contracts.
ATROPHINE SULPHATE.—9s. per oz.
BARBITONE —5s. 9d. to 6s. per lb.
BENZONAPHTHOL.—3s. to 3s. 3d. per lb. spot.
BISMUTH CARBONATE.—8s. 9d. per lb.
BISMUTH CITRATE.—8s. 3d. per lb.
BISMUTH SALICYLATE.—8s. 3d. per lb.
BISMUTH SUBNITRATE.—7s. 6d. per lb.
BISMUTH NITRATE.—Cryst. 5s. 3d. per lb.
BISMUTH OXIDE.—11s. 3d. per lb.
BISMUTH SUBCHLORIDE.—10s. 3d. per lb.
BISMUTH SUBGALLATE.—7s. 3d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.
BISMUTHI ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 1s. 0½d. per lb.; 12 W. Qts. 11½d. per lb.; 36 W Qts. 11d. per lb.
BORAX B.P.—Crystal, 24s. to 27s. per cwt.; powder, 25s. to 28s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.
BROMIDES.—Ammonium, 1s. 11½d. per lb.; potassium, 1s. 8½d. per lb.; granular, 1s. 7¾d. per lb.; sodium, 1s. 10½d. per lb. Prices for 1 cwt. lots.
CALCIUM LACTATE.—B.P., 1s. 2½d. to 1s. 3½d. per lb.
CAMPHOR.—Refined flowers, 2s. 11d. to 3s. per lb., according to quantity; also special contract prices.
CHLORAL HYDRATE.—3s. 1d. to 3s. 4d. per lb.
CHLOROFORM.—2s. 4½d. to 2s. 7½d. per lb., according to quantity.
CREOSOTE CARBONATE.—6s. per lb.
ETHERS.—S.G. ·730—11d. to 1s. per lb., according to quantity other gravities at proportionate prices.
FORMALDEHYDE, 40%.—37s. per cwt., in barrels, ex wharf.
GUAIACOL CARBONATE.—4s. 6d. to 4s. 9d. per lb.
HEXAMINE.—2s. 3d. to 2s. 6d. per lb.
HOMATROPINE HYDROBROMIDE.—30s. per oz.
HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.
HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchesters, 2s. 11d. per gall. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 4s. per gall.
HYDROQUINONE.—3s. 9d. to 4s. per lb., in cwt. lots.
HYPOPHOSPHITES.—Calcium, 2s. 5d. per lb.; potassium, 2s. 8½d. per lb.; sodium, 2s. 7½d. per lb., in 1 cwt. lots, assorted.
IRON AMMONIUM CITRATE.—B.P., 2s. 8d. to 2s. 11d. per lb. Green, 3s. 1d. to 3s. 4d. per lb. U.S.P., 2s. 9d. to 3s. per lb.
IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.
IRON QUININE CITRATE.—B.P., 8¾d. to 9¼d. per oz., according to quantity.
MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.
MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb.
MENTHOL.—A.B.R. recrystallised B.P., 20s. 6d. per lb. net; Synthetic, 12s. to 14s. per lb.; Synthetic detached crystals 12s. to 16s. per lb., according to quantity; Liquid (95%), 9s. 6d. per lb.
MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, crystals, 8s. 4d. to 8s. 5d. per lb., levig., 7s. 10d. to 7s. 11d. per lb.; Corrosive Sublimate, Lump, 6s. 7d. to 6s. 8d. per lb., Powder, 6s. to 6s. 1d. per lb.; White Precipitate, Lump, 6s. 9d. to 6s. 10d. per lb., Powder, 6s. 10d. to 6s. 11d. per lb., Extra Fine, 6s. 11d. to 7s. per lb.; Calomel, 7s. 2d. to 7s. 3d. per lb.; Yellow Oxide, 7s. 8d. to 7s. 9d. per lb.; Persulph, B.P.C., 6s. 11d. to 7s. per lb.; Sulph. nig., 6s. 8d. to 6s. 9d. per lb. Special prices for larger quantities.
METHYL SALICYLATE.—1s. 5d. to 1s. 8d. per lb.
METHYL SULPHONAL.—18s. 6d. to 20s. per lb.
METOL.—9s. to 11s. 6d. per lb. British make.
PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.
PARALDEHYDE.—1s. 4d. per lb.
PHENACETIN.—2s. 6d. to 2s. 9d. per lb.
PHENAZONE.—3s. 11d. to 4s. 2d. per lb.
PHENOLPHTHALEIN.—6s. to 6s. 3d. per lb.
POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—97s. per cwt., less 2½ per cent.
POTASSIUM CITRATE.—B.P.C., 2s. 7d. per lb. in 1 cwt. lots.
POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.
POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.
POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included f.o.r. London.
POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.
QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., bulk in 100 oz. tins.
RESORCIN.—2s. 10d. to 3s. per lb., spot.
SACCHARIN.—47s. per lb.; in quantity lower.
SALOL.—2s. 3d. to 2s. 6d. per lb.
SODIUM BENZOATE, B.P.—1s. 8d. to 1s. 11d. per lb.
SODIUM CITRATE, B.P.C., 1911.—2s. 4d. per lb., B.P.C. 1923—2s. 7d. per lb. Prices for 1 cwt. lots. U.S.P., 2s. 6d. to 2s. 9d. per lb., according to quantity.
SODIUM FERROCYANIDE.—4d. per lb., carriage paid.
SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.
SODIUM NITROPRUSSIDE.—16s. per lb.
SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—100s. to 105s. per cwt. Crystals, 5s. per cwt. extra.
SODIUM SALICYLATE.—Powder, 2s. 2d. to 2s. 5d. per lb. Crystal, 2s. 3d. to 2s. 6d. per lb.
SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 1d. per lb.
SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £28 10s. per ton, according to quantity. Delivered U.K.
SULPHONAL.—9s. 6d. to 10s. per lb.
TARTAR EMETIC, B.P.—Crystal or powder, 2s. 1d. to 2s. 3d. per lb.
THYMOL.—Puriss., 9s. 1d. to 9s. 4d. per lb., according to quantity. Firmer. Natural, 12s. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.
AUBEPINE (EX ANETHOL).—11s. per lb.
AMYL ACETATE.—2s. 6d. per lb.
AMYL BUTYRATE.—5s. per lb.
AMYL SALICYLATE.—2s. 9d. per lb.
ANETHOL (M.P. 21/22° C.).—5s. 6d. per lb.
BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.
BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—1s. 10d. per lb.
BENZYL ALCOHOL FREE FROM CHLORINE.—1s. 10d. per lb.
BENZYL BENZOATE.—2s. 3d. per lb.
CINNAMIC ALDEHYDE NATURAL.—14s. per lb.
COUMARIN.—9s. per lb.
CITRONELLOL.—10s. per lb.
CITRAL.—8s. per lb.
ETHYL CINNAMATE.—6s. 6d. per lb.
ETHYL PHTHALATE.—3s. per lb.
EUGENOL.—12s. 6d. per lb.
GERANIOL (PALMAROSA).—21s. per lb.
GERANIOL.—6s. 6d. to 10s. per lb.
HELIOTROPINE.—8s. per lb.
ISO EUGENOL.—14s. 3d. per lb.
LINALOL.—Ex Bois de Rose, 12s. 6d. per lb. Ex Shui Oil, 10s. per lb.
LINALYL ACETATE.—Ex Bois de Rose, 16s. per lb. Ex Shui Oil, 12s. per lb.
METHYL ANTHRANILATE.—8s. per lb.
METHYL BENZOATE.—4s. per lb.
MUSK KETONE.—34s. per lb.
MUSK XYLOL.—7s. per lb.
NEROLIN.—3s. 9d. per lb.
PHENYL ETHYL ACETATE.—11s. per lb.
PHENYL ETHYL ALCOHOL.—10s. per lb.
RHODINOL.—56s. per lb.
SAFROL.—2s. 6d. per lb.
TERPINEOL.—1s. 6d. per lb.
VANILLIN, EX CLOVE OIL.—18s. per lb. Ex Guaiacol, 15s. 6d. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 10s. 6d. per lb.
ANISE OIL.—3s. per lb.
BERGAMOT OIL.—18s. per lb.
BOURBON GERANIUM OIL.—22s. per lb.
CAMPHOR OIL (White).—1s. 9d. per lb.
CANANGA OIL, JAVA.—11s. 6d. per lb.
CASSIA OIL, 80/85%.—6s. 3d. per lb.
CINNAMON OIL LEAF.—9s. per oz.
CITRONELLA OIL.—Java, 2s. 8d. per lb., c.i.f. U.K. port. Ceylon, pure, 2s. 4d. per lb.
CLOVE OIL (90/92%).—9s. 6d. per lb.
EUCALYPTUS OIL, AUSTRALIAN, B.P. 70/75%.—1s. 10d. per lb.
LAVENDER OIL.—Mont Blanc, 38/40%, 17s. per lb.
LEMON OIL.—17s. per lb.
LEMONGRASS OIL.—4s. per lb.
ORANGE OIL, SWEET.—19s. per lb.
OTTO OF ROSE OIL.—Anatolian, 35s. per oz. Bulgarian, 75s. per oz.
PALMA ROSA OIL.—12s. 6d. per lb.
PEPPERMINT OIL.—English, 87s. 6d. per lb.; Wayne County, 14s. per lb.; Japanese, 7s. 3d. per lb.
PETITGRAIN.—8s. 9d. per lb.
SANDALWOOD.—Mysore, 30s. per lb.: 90 95%. 19s. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, July 11, 1929.

THERE is not much change to report on the London market this week.

General Chemicals

ACETONE remains firm at £75 to £85 per ton, according to quantity.

ACETIC ACID is still in very short supply. Price unchanged at £36 10s. to £37 10s. per ton for 80% technical quality.

ACID CITRIC.—Firm at 2s. 2d. to 2s. 3d. per lb., and in fair demand.

ACID FORMIC is in steady demand. Price unchanged at £42 per ton for the 85%, in free carboys.

ACID LACTIC.—Firm at £43 per ton for standard quality 50% by weight, in steady demand.

ACID TARTARIC.—The improved demand continues. Price firm at 1s. 4¾d., less 5%.

ALUMINA SULPHATE.—Unchanged at £7 15s. to £8 per ton, and in good demand.

ARSENIC.—Unchanged at £16 5s. per ton, free on rail mines.

BARIUM CHLORIDE is very firm at about £12 per ton, ex wharf. Very little available for prompt delivery.

CREAM OF TARTAR.—Firm at £98 to £100 per ton for 99/100% B.P. quality. An early advance in price is not unlikely.

COPPER SULPHATE.—Unchanged at £26 15s. to £27 per ton.

FORMALDEHYDE.—Remains steady at £38 10s. per ton, and in brisk demand.

LEAD ACETATE.—Unchanged at £44 per ton for white, £43 for brown.

LEAD NITRATE.—About £33 15s. per ton, and in rather slow demand.

LIME ACETATE.—Supply very short. Price firm at £18 per ton.

LITHOPONE.—Steady at £19 15s. to £22 per ton, according to quantity.

METHYL ACETONE is firm at £58 to £60 per ton, and in steady demand.

POTASH CHLORATE.—£28 to £30 per ton.

POTASSIUM PERMANGANATE.—Firm at 5½d. per lb. for B.P. needle crystals.

POTASSIUM PRUSSIATE.—Firm at £63 10s. to £65 10s., according to quantity.

SODIUM ACETATE CRYSTALS.—Still in short supply, and firm at £22 10s. to £23 per ton.

SODIUM BICHROMATE.—3½d. per lb., with discounts for contracts. Steady demand.

SODIUM HYPOSULPHITE.—Photographic pea crystals at £14 10s. to £15 per ton, and in steady demand.

SODIUM NITRITE is in steady demand at £20 per ton.

SODIUM PHOSPHATE.—Dibasic at £12 per ton, tribasic at £16 10s. per ton.

SODIUM PRUSSIATE.—Firm, and in steady demand at 4¾d. to 5½d. per lb., according to quantity.

TARTAR EMETIC.—Demand is improving. Price at 11d. per lb.

ZINC SULPHATE.—Remains steady at £12 per ton.

Coal Tar Products

The coal tar products market remains quiet, and prices are unchanged from last week.

MOTOR BENZOL remains at 1s. 5½d. to 1s. 6d. per gallon, f.o.r. makers' works.

SOLVENT NAPHTHA is quoted at about 1s. 2d. to 1s. 2½d. per gallon, f.o.r.

HEAVY NAPHTHA is unchanged at about 1s. 1d. per gallon, f.o.r.

CREOSOTE OIL is unchanged, at 3¾d. to 4d. per gallon on rails in the North, and at 4¼d. to 4½d. per gallon in London.

CRESYLIC ACID is quoted at about 1s. 10d. per gallon for the 98/100% quality, and at about 1s. 7d. per gallon for the dark quality, 95/97%.

NAPHTHALENES remain firm, at about £4 10s. per ton for the firelighter quality, about £5 per ton for the 74/76 quality, and £6 to £6 5s. per ton for the 76/78 quality.

PITCH.—Owing to the active enquiry for autumn delivery, makers are advancing their ideas to 40s. to 42s. 6d. per ton, f.o.b. East Coast.

Nitrogen Products

Sulphate of Ammonia.—There is no change to report this week and practically no business is being done at the present moment.

Nitrate of Soda.—There is no change to report. The new season's prices have not yet been announced by the Chilean producers.

Latest Oil Prices

LONDON, July 10.—LINSEED OIL was firm and in fair request at 5s. advance. Spot, ex mill, £32 15s.; July to April, £30, naked. RAPE OIL was steady. Crude extracted, £41 5s.; technical refined, £43 5s., naked, ex wharf. COTTON OIL was firm. Egyptian crude, £29; refined common edible, £34; and deodorised, £36, naked, ex mill. TURPENTINE was quiet. American, spot, 44s. 3d.; July, 43s. 6d.; and August-December, 42s. per cwt.

HULL, July 10.—LINSEED OIL.—Spot, £32 5s.; July, £31 15s.; August, £30 15s.; September-December, £30 2s. 6d. COTTON OIL.—Egyptian crude, spot, £29 15s.; July-August, £29 5s.; edible refined and technical, spot, £33 10s.; deodorised, spot, £35 10s. PALM KERNEL OIL.—Crude naked, 5¼ per cent., £34 10s. GROUNDNUT OIL.—Crushed-extracted, £33 10s.; deodorised, £37 10s. SOYA OIL.—Extracted and crushed, £31; deodorised, £34 10s. RAPE OIL.—Crushed-extracted, £40 10s.; refined, £42 10s. per ton. TURPENTINE.—Spot, 46s. per cwt., net cash terms, ex mill.

South Wales By-Products

MORE activity is evident in South Wales by-products. Pitch has developed strongly on the week, and demand and prices are better on a basis of 38s. to 40s. per ton. With the new shipping season on hand, these prices are likely to strengthen further during the next few weeks. Road tar has a slightly better call, but values are unchanged at from 10s. 6d. to 13s. per 40-gallon barrel. Crude tar is also experiencing a more active period, and values are better at from 25s. to 30s. per ton. Creosote remains weak, with prices unchanged at from 3½d. to 4¾d. per gallon. Motor benzol is on offer at 1s. 5½d. to 1s. 7d. per gallon, but has only a quiet demand, a remark which also applies to solvent naphtha at from 1s. 3½d. to 1s. 5d. per gallon. Refined tars continue to have a fairly brisk call, and prices remain unchanged. Crude naphthalene is quiet at 80s. per ton, and there is scarcely any call for whizzed at about 100s. per ton. Patent fuel and coke exports are slightly better, but are still far from satisfactory. Patent fuel quotations are: Ex-ship Cardiff, 21s. to 21s. 6d.; ex-ship Swansea, 20s. to 20s. 6d. Coke quotations are: Best foundry, 32s. 6d. to 36s. 6d.; good foundry, 26s. 6d. to 32s.; and furnace, 21s. to 23s. per ton. Oil imports for the month amounted to 12,351,905 gallons.

U.S. Sulphur Production in 1928

THE production of sulphur in the United States in 1928 amounted to 1,981,873 long tons, compared with 2,111,618 tons in 1927, a decrease of 6 per cent., the Department of Commerce announces, in summarising a statistical canvass made by the United States Bureau of Mines. The shipments in 1928 were a record, 2,082,924 tons, valued at approximately $37,500,000, compared with 2,072,109 tons, valued at approximately $38,300,000, in 1927. Stocks on hand at the mines decreased approximately 100,000 tons in 1928 and totalled about 2,000,000 tons at the end of the year, the smallest since 1921. Two new properties contributed to the sulphur production of Texas in 1928, those of the Union Sulphur Co. at Wharton, Texas, and the Duval Texas Sulphur Co. at Benavides, Texas. The average quoted price for sulphur as reported by trade journals was $18 a ton f.o.b. mines throughout the year. Open prices were $1 a ton higher and prices for sulphur exported were given as $22 a ton f.a.s. Atlantic ports. Exports of sulphur or brimstone from the United States totalled 685,051 long tons in 1928, valued at $14,345,075, of which 159,664 tons were exported to Canada, 125,659 tons to Germany, 109,348 tons to France, 85,500 tons to Australia, 48,928 tons to the Netherlands, 44,098 tons to the United Kingdom, and 22,801 tons to New Zealand. Exports of sulphur or brimstone in 1927 amounted to 789,274 tons. The exports in 1927 were the highest ever recorded and those for 1928 were second in importance. Exports of refined, sublimed, and flowers of sulphur increased from 31,419,221 lbs., valued at $544,373 in 1927 to 44,536,508 lb., valued at $706,766, in 1928. Imports of sulphur and sulphur ore for 1928 amounted to 3,938 long tons.

New B.D.H. Catalogue

BRITISH DRUG HOUSES, LTD., of Graham Street, City Road, London, have issued a new edition of their catalogue of fine chemical products, dated July, 1929. The catalogue, which covers 130 pages, includes organic and inorganic chemicals, analytical reagents, standard stains, indicators, volumetric solutions, etc. In addition to a number of new chemicals, details are also given of the B.D.H. capillator compensating cell, by the use of which, in conjunction with the B.D.H. capillator, the pH of dark-coloured liquids may be determined with very great accuracy.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, July 10, 1929.

DURING the past week the heavy chemical market has been rather quiet, possibly on account of the near approach of local holidays. There are no changes of any importance to record, except that in regard to acetic acid supplies are very scarce, and stock holders are obtaining higher prices for prompt delivery.

Industrial Chemicals

ACETONE.—B.G.S., £76 10s. to £85 per ton, ex wharf, according to quantity. Inquiry remains satisfactory.

ACID ACETIC.—98/100% Glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80% pure, £37 10s. per ton, ex wharf; 80% technical, £37 10s. per ton, ex wharf.

ACID BORIC.—Crystals, granulated or small flaked, £30 per ton. Powder, £32 per ton, packed in bags, carriage paid U.K. stations. There are a few fairly cheap offers made from the Continent.

ACID CARBOLIC ICE CRYSTALS.—Unchanged at 6½d. per lb., delivered or f.o.b. U.K. ports.

ACID CITRIC B.P. CRYSTALS.—Quoted 2s. 2½d. per lb., less 5%, ex store, spot delivery. Offered at 2s. 2¼d. per lb., less 5% ex wharf, prompt shipment from the Continent.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy. Dearsenicated quality, 5s. 6d. per carboy, ex works, full wagon loads.

ACID NITRIC, 80° QUALITY.—£24 10s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—Price remains unchanged at about 3½d. per lb., ex store. Offered for prompt shipment from the Continent at 3½d. per lb., ex wharf.

ACID SULPHURIC.—£2 15s. per ton, ex works, for 144° quality; £5 15s. per ton for 158° quality. Dearsenicated quality, 20s. per ton extra.

ACID TARTARIC B.P. CRYSTALS.—Spot material now quoted 1s. 4½d. per lb., less 5% ex wharf.

ALUMINA SULPHATE.—In scarce demand and price now quoted about £7 per ton, ex wharf.

ALUM LUMP POTASH.—Unchanged at about £8 12s. 6d. per ton, c.i.f. U.K. ports. Crystal meal offered on spot at £9 per ton, ex store.

AMMONIA ANHYDROUS.—Quoted 7½d. per lb., carriage paid. Containers extra and returnable.

AMMONIA CARBONATE.—Lump quality quoted £36 per ton; powdered, £38 per ton, packed in 5 cwt. casks, delivered U.K. stations or f.o.b. U.K. ports.

AMMONIA LIQUID 880°.—Unchanged at about 2½d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £21 to £22 per ton, ex station. Fine white crystals offered from the Continent at about £17 5s. per ton, c.i.f. U.K. ports.

ANTIMONY OXIDE.—Quoted £37 per ton, c.i.f. U.K. ports, prompt shipment from China. Spot material unchanged at about £40 per ton, ex store.

ARSENIC, WHITE POWDERED.—Unchanged at £18 5s. per ton, ex wharf, prompt despatch from mines. Spot material quoted £19 15s. per ton, ex store.

BARIUM CHLORIDE.—Quoted £10 10s. per ton, c.i.f. U.K. ports, prompt shipment.

BLEACHING POWDER.—British manufacturers' contract price to consumers unchanged at £6 12s. 6d. per ton, delivered in minimum 4-ton lots. Continental now offered at about the same figure.

CALCIUM CHLORIDE.—Remains unchanged. British manufacturers' price £4 5s. per ton to £4 15s. per ton, according to quantity and point of delivery. Continental material on offer at £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works or £4 12s. 6d. per ton, f.o.b. U.K. ports.

FORMALDEHYDE, 40%.—Still in fairly good demand and price now quoted is £36 10s. per ton, ex store.

GLAUBER SALTS.—English material quoted £4 10s. per ton, ex station. Continental on offer at about £3 5s. per ton, ex wharf.

LEAD, RED.—On offer at £29 15s. per ton, ex store.

LEAD, WHITE.—Quoted £37 10s. per ton, c.i.f. U.K. ports.

LEAD ACETATE.—White crystals quoted £41 10s. per ton; brown on offer at about £39 10s. per ton, ex store.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store. In moderate demand.

METHYLATED SPIRIT.—Industrial quality 64 O.P. quoted 1s. 4d. per gallon, less 2½% delivered.

POTASSIUM BICHROMATE.—Quoted 4⅞d. per lb. delivered U.K. or c.i.f. Irish ports, with an allowance of 2½% for minimum 2½ tons to be taken.

POTASSIUM CARBONATE 96/98%.—Spot material now quoted £26 10s. per ton, ex store. Offered from the Continent £25 10s. per ton, c.i.f. U.K.

POTASSIUM CHLORATE 99¾/100% Powder.—Quoted £25 10s. per ton, ex wharf. Crystals, 30s. per ton extra.

POTASSIUM NITRATE.—Refined granulated quality quoted £19 2s. 6d. per ton, c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 5½d. per lb., ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—Offered for prompt shipment from the Continent at 6⅞d. per lb., ex wharf. Spot material quoted 7d. per lb., ex store.

SODA, CAUSTIC.—Powdered 98/99%. Now £17 10s. per ton in drums; £18 15s. per ton in casks. Solid 76/77%, £14 10s. per ton in drums and 70/75%, £14 2s. 6d. per ton in drums, all carriage paid buyers' stations, minimum 4-ton lots, for contracts, 10s. per ton less.

SODIUM ACETATE, 65%.—Crystal quality quoted about £19 15s. per ton, ex wharf. 63/78% Anhydrous quality on offer at £20 per ton, carriage paid buyers' stations.

SODIUM BICARBONATE.—Refined recrystallised, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—Manufacturers advise an advance in price of ⅛d. per lb., making the spot price now 3⅜d. per lb., delivered as from July 1, with special concession for contracts from 2½ tons up to 25 tons.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality, 27s. 6d. per ton extra. Light soda ash, £7 1s. 3d. per ton, ex quay, minimum 4-ton lots with various reductions for contracts.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £8 17s. 6d. per ton, ex station, minimum 4-ton lots. Pea crystals on offer at £14 15s. per ton, ex station, minimum 4-ton lots. Prices for this year unchanged.

SODIUM NITRATE.—Ordinary quality quoted £10 12s. per ton, carriage paid, buyers' sidings, minimum 6-ton lots, usual extras for small quantities and refined qualities.

SODIUM PRUSSIATE.—Spot material quoted 7d. per lb. Offered for prompt shipment from the Continent at 6¾d. per lb., c.i.f. U.K. ports.

SODIUM SULPHATE (SALTCAKE).—Prices 50s. per ton, ex works, 52s. 6d. per ton delivered for unground quality. Ground quality, 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Prices for home consumption. Solid 60/62%, £9 per ton. Broken, 60/63%, £10 per ton. Crystals, 30/32%, £7 2s. 6d. per ton, delivered buyers' works on contract, minimum 4-ton lots. Special prices for some consumers. Spot material 5s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 10s. per ton; rock, £10 7s. 6d. per ton; ground American, £9 5s. per ton, ex store.

ZINC CHLORIDE 98%.—British material now quoted at £22 10s. per ton f.o.b. U.K. ports.

ZINC SULPHATE.—Offered from the Continent at about £10 5s. per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small quantities.

Marking of Asbestos Cement Goods

AN application for an Order under Section 2 of the Merchandise Marks Act, 1905–1919, that asbestos cement goods should bear on sale, or exposure for sale, an indication of origin, as required by the Act, was heard on Monday by the Standing Committee (General Merchandise) appointed by the Board of Trade. Sir H. Llewellyn Smith presided. The application was made by Bells Poilite and Everite Co., Ltd., Turner Bros. Asbestos Co., Ltd., and the British Fibrocement Works, Ltd., all of Great Britain. Counsel for the opponents remarked that they did not feel they could contest the making of a marking order, but they thought the method of marking should be left to the option of the foreign manufacturer. The inquiry was closed, the chairman remarking that the Committee would report to the Board of Trade.

Manchester Chemical Market

(From Our Own Correspondent.)

Manchester, July 11, 1929.

The home trade demand for chemical products on this market during the past week has been of moderate dimensions, and except for a slight slackening off here and there, as a result of holiday influences, there has not been much change in the general situation. On the whole, contract deliveries of the bulk chemicals are keeping up and there is a quietly steady business being put through on the open market. With regard to overseas trade there has been some inquiry about, but, for the most part, it has related to small parcels.

Heavy Chemicals

There has been only a comparatively moderate movement of chlorate of soda, but quotations, though easy in tendency, are still at about 2½d. to 2¾d. per lb. Prussiate of soda is a firm section and there is a fair trade passing, with current values ranging from 4¾d. to 5¼d. per lb. Offers of saltcake are in the neighbourhood of £2 15s. per ton, but buying interest in this material just now is anything but brisk. There is a quiet demand about for hyposulphite of soda, with quotations pretty well maintained, the photographic grade selling at round £15 10s. per ton, and the commercial at £8 15s. Bichromate of soda is steady at the new level of from 3⅞d. per lb., subject to discounts for quantities, and a quietly steady trade in this section has been reported here this week. Bicarbonate of soda is in moderate request with makers' prices at about £10 10s. per ton for contracts. Inquiry for sulphide of sodium is rather slow, but values are held at £8 per ton for the commercial kind and about £9 for the 60-65 per cent. concentrated solid quality. Phosphate of soda is steady and meets with a quiet demand at £11 15s. per ton. With regard to caustic soda, values continue firm at from £12 15s. to £14 per ton, according to quality and in contract lots, and a fair business in this material is being done. Alkali, which is quoted at round £6 per ton, is somewhat similarly situated.

Only a relatively quiet demand for carbonate of potash is reported, and offers are on somewhat easier terms at about £25 15s. per ton for the 96 per cent. solid. Although not particularly active, permanganate of potash is displaying some firmness, with the B.P. quality quoted at from 5½d. to 5¾d. per lb. and the commercial at round 5¼d. Bichromate of potash meets with a fair volume of inquiry, with offers still on the basis of 4⅞d. per lb. Causic potash is now being quoted here at down to £31 15s. per ton, in quantities. There is not a great deal of buying interest being shown in the case of chlorate of potash, but prices are unchanged on the week at from 2¾d. to 3d. per lb. Yellow prussiate of potash is in moderate inquiry and prices firm at from 6¾d. to 7¼d. per lb., according to quantity.

The demand for arsenic this week has been on quiet lines, but values are steady at from £16 to £16 10s. per ton at the mines for white powdered, Cornish makes. There has been a moderate inquiry about for sulphate of copper, current offers of which are in the neighbourhood of £27 15s. per ton. The acetates of lime are steady, although only in comparatively quiet demand at the moment at round £16 10s. per ton for the grey material and £8 5s. for the brown. Lead nitrate is quiet and easy at about £34 per ton, as are also white acetate of lead at £40 per ton and brown quality at round £39.

Acids and Tar Products

Tartaric acid keeps reasonably steady at 1s. 4¼d. per lb., and a fair volume of inquiry has been met with since last report. Citric acid appears to be easy in tendency at from 2s. 1d. to 2s. 1½d. per lb., with a moderate business going through in this section. With regard to oxalic acid, this is somewhat firmer at about £1 12s. 6d. per cwt., ex store. There is a steady demand about for acetic acid and values are well held at round £67 per ton for the glacial quality and £36 for the 80 per cent. commercial.

Among the by-products, pitch appears to be fairly steady at present at about £2 a ton, f.o.b., at which figure a moderate amount of forward business has been done during the week. Creosote oil continues quiet at 2¾d. per gallon, naked. Crude carbolic acid is scarce and dearer at round 2s. 2d. per gallon, naked, at works. with crystal very firm and in steady demand at up to 7d. per lb., f.o.b. Solvent naphtha is in moderate inquiry at about 1s. 2d. per gallon.

Company News

Electrolytic Zinc Co. of Australasia.—A dividend at the rate of 12 per cent. per annum has been declared for the six months ended June 30 last on the whole of the issued shares of the company, payable on September 6.

British Oxygen Co.—After providing for debenture interest and redemption, depreciation and all standing charges, the balance for the year ended March 31, 1929, amounted to £135,727, as compared with £125,488 in the previous year. The directors recommend a final dividend of 1s. 3d. per share, subject to income tax, absorbing £46,875, making, with the interim dividend of 9d. per share, subject to income tax, paid in December last (£28,125), a total for the year of £75,000, equivalent to a dividend of 2s., or 10 per cent. (same as last year). The balance remaining for year will therefore be £60,727, and this amount, together with £153,135 standing to the credit of profit and loss account, in accordance with last year's report, makes £213,862. The final settlement of excess profits duty and adjustment of corporation profits tax and income tax have been effected by payment of £33,866, leaving a balance of £179,996. The directors have transferred to general reserve fund £98,344, bringing that fund to a total of £250,000 and reducing balance of appropriation account from £153,135 as at last year, to £81,652. The annual meeting will be held at the Great Eastern Hotel, London, on July 16, at 12 noon.

Advance in Canadian Chemical Production

In the course of an address given by Mr. S. J. Cook, Chief of the Mining, Metallurgical and Chemical Branch of the Dominion Bureau of Statistics, at the Chemical Exposition held recently at New York City, Mr. Cook mentioned that during 1928 the total production of Canadian plants in the chemical industry reached a value of $143,000,000, as compared with $127,484,672 in 1927, a substantial increase of over $15,500,000.

Canadian imports of chemical products during the year were valued at $36,963,894, of which products worth $25,428,284 were purchased from the United States. Exports of Canadian chemical and allied products during the year were valued at $18,356,645, of which one-half was sold to customers in the United States. The total consumption of chemical products in Canada during the year is therefore reckoned at about $162,000,000, an increase of $19,000,000 during the twelve months, and a per capita consumption of $16·20.

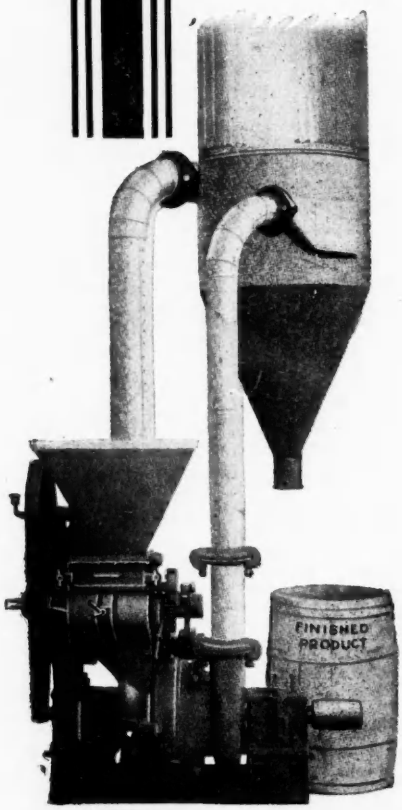
In 1928 the capital investment in the 569 plants was about $146,000,000, a figure which is almost the same as the value of the year's production. The net value of production, calculated as being the value added to raw materials by manufacturing processes, was about $70,000,000.

Fertiliser Production in Jugoslavia

Three large factories in Jugoslavia are engaged in the production of calcium cyanamide. The present annual capacity of the plants is 75,000 metric tons of 20 per cent. calcium cyanamide. Energetic propaganda is being carried on among the peasants in order to acquaint them with the benefits of artificial fertilising, but a considerable part of the product is still exported. In 1928 exports of cyanamide from Jugoslavia amounted to 27,300 metric tons, a decline of approximately 1,000 tons from the 1927 figure. Superphosphate is being manufactured by four plants having a total annual capacity of 180,000 metric tons. Approximately 2,000,000 dinars are spent annually for propaganda to increase the use of superphosphate.

Iodine from Seaweed

A reliable Norwegian source reports that efforts are being made to organise a new company for the manufacture of iodine from seaweed. The factory is to be located on the west coast of Norway where seaweed is found in sufficiently large quantities to make gathering profitable. It is now being done on a small scale. At present the iodine-content ash obtained from burning the weed is being shipped to England for conversion into the finished product. The object of the promoters of the new company is to encourage the gathering of the raw material in larger quantities than is being done now.



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Sulphur and Pyrites Statistics

Imports and Exports for France, Germany and Sweden

THE production of pyrites in France in December, 1928, of 13,944 metric tons rose to 16,062 metric tons in January, 1929. This rate of production corresponds to 180,000 to 200,000 metric tons per annum. French imports of pyrites during recent years have ranged (in metric tons) as follows: 518,341 in 1926, 762,105 in 1927, and 323,674 in 1928. The increase in these imports from 1926 to 1927 was nearly 50 per cent. and about 8 per cent. in recent years.

Imports of pyrites into Germany in 1928 increased about 14 per cent. over the previous year (951,745 to 1,084,338 tons). This is attributable to Germany's increased requirements for sulphur, the imports of which also showed an increase of 12 per cent. in the same period as reported. About 86 per cent. of the pyrites is imported from Norway and Spain, and the remainder comes largely from Mediterranean countries. Germany exports 35,000 to 37,000 metric tons of pyrites annually. Since German annual production of pyrites is some 350,000 metric tons, the 1928 consumption was about 1,400,000 tons. On the basis of 40 per cent. sulphur content, this represents sulphur consumption of 560,000 metric tons from pyrites, as compared with some 40,000 tons (net sulphur imports), making total sulphur consumption roughly 600,000 tons.

Increased activities in the Swedish paper and pulp industry are said to have augmented the requirements for sulphur in 1928. This is reflected in the imports for the July-December period, which were some 52,300 tons, as compared with about 50,500 tons in the same period of 1927. This is an increase of 1,800 tons. During the December, 1928, quarter, the pyrites imports were 57,049 tons, as compared with 61,494 tons for the September quarter. Sulphur imports into Sweden come largely from Hamburg, Spain and the Mediterranean, while pyrites is imported mostly from Norway.

An Estimate of the British Camphor Trade

MR. HOMER S. FOX, United States Trade Commissioner in London, states in a report to the U.S. Department of Commerce that official British statistics relating to synthetic camphor are practically non-existent, but a reliable estimate is that imports of this product would probably vary from 50 to 750 long tons or even more annually. It is understood that synthetic camphor is not manufactured in Great Britain, at least for general sale, although it is believed that some production has been undertaken by one or two firms for their own use. The principal use of the product is in the manufacture of celluloid. The official import and export statistics do not distinguish between synthetic and natural camphor, nor between the various grades. During the last five years for which statistics are available (1923–1927) the annual imports of all kinds of camphor averaged 8,887 hundredweight, of which an average of 1,091 hundredweight per year was re-exported. Approximately one-half of the imports come from Japan and Formosa, and about 2,000 hundredweight per year from Germany, the latter country probably providing chiefly the synthetic product. During the past two or three years there has been some decline in the total imports, the figure of 6,968 hundredweight in 1927 comparing with a little over 12,000 hundredweight in 1923.

United States Exports of Ammonium Sulphate

A COMPARISON of figures for the last three years reveals a steady decline in the quantities of ammonium sulphate exported from the United States (1926, 181,125 long tons; 1927, 138,692 long tons; 1928, 93,015 long tons). The loss of more than 45,000 tons in the foreign sales for 1928 is not due to a decreased consumption abroad, for Germany and Great Britain are shipping increasing quantities to foreign markets. Rather, it is attributable to the greatly increased consumption within the United States, which likewise is reflected by the considerable growth in imports of sulphate of ammonia, from 17,000 tons in 1927 to more than 42,000 in 1928. Considered from the standpoint of foreign markets, the most marked decreases took place in shipments to Cuba, Java, and Japan. The Asiatic market normally accounts for nearly 90 per cent. of the United States exports of this commodity.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[*NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.*]

BISSELL, S. S. J., 53, Graiseley Street, Wolverhampton, manufacturer (trading as WOODBROOK DRUG CO.). (C.C., 13/7/29.) £15 10s. 3d. May 29.

Receiverships

HARDIES (MANCHESTER), LTD. (R., 13/7/29.) C. E. W. Lavender, C.A., of 18, Exchange Street, Manchester, was appointed receiver and manager on June 25, 1929, under powers contained in debenture dated August 28, 1928.

YAVAN, LTD. (R., 13/7/29.) P. H. Green, of 17, Ironmonger Lane, E.C.2, was appointed receiver and manager on June 24, under powers contained in debenture dated May 14, 1929.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case, the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

DUNBOW, LTD., London, E.C., manufacturers of medicinal preparations. (M., 13/7/29.) Registered July 1, £500 debentures; charged on apparatus schedules in debenture, also general charge.

LOVERING CHINA CLAYS, LTD., London, E.C. (M., 13/7/29.) Registered June 20, £250,000 debentures and premium of 1 per cent. (secured by Trust Deed dated June 7, 1929); general charge.

London Gazette, &c.

Company Winding Up

YORKSHIRE ARTIFICIAL SILK CO., LTD. (C.W.U., 13/7/29.) Winding up order, July 1.

Company Winding Up Voluntarily

RANELAGH DYE WORKS, LTD. (C.W.U.V., 13/7/29.) By special resolution, June 19th, confirmed July 4th. L. W. Moritz, Chartered Accountant, 1 and 2, Bucklersbury, E.C., appointed as liquidator. Meeting of creditors at the offices of R. McKerrow and Co., 1 and 2, Bucklersbury, E.C.4, July 22, at 2.30 p.m. (All creditors have been, or will be, paid in full.)

The Japanese Nitrogen Situation

THE Japan Nitrogen Fertiliser Co., of Osaka, capitalised at 45,000,000 yen, with 27,750,000 yen paid up, manufactures sulphate of ammonia, cyanide and by-products at its factories in Kumamoto and Miyazaki. Of the 450,000 tons of sulphate of ammonia consumed in Japan last year this company produced 100,000 tons, other domestic manufacturers produced 100,000 tons, and 250,000 tons were imported. The Japan Nitrogen Fertiliser Co. is now building two plants in Chosen, one of which will have an annual capacity of 100,000 tons. It is stated that this company is planning to establish other plants, so that within the next four or five years the annual production of the company will reach 900,000 tons. Considering the fact that other companies are also planning to increase their output, it is evident that Japan will, if these plans are realised, be more than self-sufficient as far as sulphate of ammonia is concerned, and will be forced to find an export market for the surplus.